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Pruning the Peach Tree

by W. S. Perrine

THE PRINCIPLES of pruning are the same for all kinds of fruit trees. To this general rule, the peach is no exception.

Until quite recently, it was thought that because the peach bore its fruit entirely on the previous season's wood, it was necessary to prune it heavily in order to produce a large amount of new growth for the following year's crop. It was generally believed that when peaches were pruned heavily, the trees grew better and finer and larger crops of fruit were produced.

Recent experiments in California and elsewhere, and my own personal experience, have convinced me that that method of pruning is far from being the best one. It seems quite clear now that the more a tree is pruned the less it grows and the later it tends to come into bearing. And conversely, the less a tree is pruned, the more it grows and the younger it tends to come into bearing.

Severe pruning only seems to produce a better growth of the tree because the growth is concentrated in a few strong, succulent shoots, near the cuts. This excessive growth in the tops is made at the expense of the lower part of the tree, both because the shoots get more than their share of the food and because they shade out the lower growth. The result is that the number of growing points in the tree is greatly lessened, and, as a consequence, the total growth of the tree is diminished. It is for this reason that pruning dwarfs a tree.

On the other hand, the tree that is pruned lightly has few, if any, succulent shoots, but the growth is distributed all over the tree in a very large number of growing points. Thus the total growth of the tree is increased and at the same time the growth of the individual twigs is lessened, so that the tree comes into young or early bearing.

Then Why Should We Prune at All?

The only reason for pruning young trees is to get the framework limbs properly placed and spaced on the trunk, and to restrict the number of primary and secondary branches. This result should be accomplished with as little pruning as possible in order not to aggravate the vegetative tendencies of young trees. And the pruning and shaping may be better done by summer pruning during the first two or three years than by winter pruning.

It may help us to get a better understanding of the matter if we now try to follow year by year the development of trees pruned by the two systems.

The so-called California Long System of pruning is in essence the same system that the East has always used in pruning the apple. California experiments have proved it to be the best for the peach also.

If properly handled from the nursery to the orchard, medium to rather heavy trees are best to plant. The typical tree must be pruned to a switch, for the branches are usually too low to be kept for framework branches. Head to about 24 to 30 inches. The pruning, good cultivation, and a little nitrate should result in a rather vigorous growth from the start.

When the growth is about four to six inches long, select three of the strongest branches that are well balanced and with as much space as possible between them on the trunk. Repress the others by pinching off the ends. If there are many branches, some of them should be removed entirely. If the growth of the tree is quite vigorous, limbs will develop to compete with, or supplant, the branches selected for the framework. In three or four weeks after the first pruning, the trees should be gone over again and new branches should either be removed or suppressed.

Repeat this process every three or four weeks all summer if possible to do so. This summer training directs the growth into the framework and does it with little or no dwarfing of the tree. The tree will be practically as large as if everything had been left to grow, and no winter pruning will be necessary. If very light switches are planted, much less summer pruning will be necessary, but the trees will be much smaller at the end of the season.

Figure 1 shows a typical tree at the end of the first season, summer pruned.

The second summer the process is much the same as the first. Allow each of the three main framework branches to form two or three main secondary branches growing outward, and repress others. Keep the trees open and guard constantly against too many large limbs, at the same time encouraging the small growth.

Figure 2 shows the tree at the end of the second season, summer pruned.

Less summer pruning is required the third season, and during the fourth season comparatively little is necessary. It can all be done at the winter pruning without causing much, if any, vegetative growth.

Figure 3 shows a tree at the end of the third season, and Figure 4 shows a typical tree near the end of the fourth season. The tree is rather open, very spreading, and has a large

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Figure 3—Tree at end of third season. Summer pruned, no cutting back

Figure 1—Tree at end of first season, summer pruned

Figure 2—Tree at end of second season, long pruned in summer

Editorial Contents

Transplanting Large Apple Trees

by B. S. Pickett
Iowa State College

THERE are several conditions under which both commercial and amateur fruit growers might find it advisable to transplant fruit trees of larger size and greater age than ordinary nursery stock. In commercial practice it would be highly advantageous to double-plant apple orchards and later thin the trees as they begin to touch each other to give the necessary space for the development of the remaining trees. In double-planted orchards, thinning must always be done soon after the trees begin to produce good crops, and many orchardists would like to move these trees to new locations. In other cases, it would be an advantage if nursery trees were grown for three or four years in a close arrangement provided they could then be moved cheaply enough and with comparatively little set-back.

In amateur fruit growing there are many circumstances under which it might be very desirable to transplant large trees. Many people of means would be very glad to pay well for the transplanting of large fruit trees if they could be assured of earlier bearing and satisfactory growth. It is frequently necessary to rearrange the planting in suburban gardens and lawns, and valuable trees are sacrificed which the owner would be glad to save if they could be transplanted successfully.

Conditions for Successful Transplanting

The conditions which insure successful transplanting are, essentially, the moving of the tree without unduly breaking the line of water transportation from the ground to the leaves. Water is essential to keep the living cells of the tree turgid and to transport inorganic food materials from the soil to the leaves and back again from the leaves to the growing parts of the plant. Without it the tree dries out and all living processes slow down until death finally results.

The water stream will be less disturbed if the tree is moved when all life processes are at a minimum. This, of course, will be while the tree is dormant, after the leaves have fallen in the autumn and before growth has started in the spring. The continuity of the stream will also be disturbed less if the entire root system is moved, if the moving is done promptly so that the roots are exposed for the shortest possible time to the air, and if the soil in the new location is moist and packed firmly around the roots. It is self-evident that if the soil in which the roots are growing were all moved along with the roots without being loosened or disturbed in any way and that if this soil were kept moist, there would be no break whatever in the continuity of the moisture stream.

Problem of Engineering and Economics

When the conditions which favor successful transplanting are fully understood, the operation itself becomes a problem in engineering and economics. The largest of trees could be moved by keeping all the roots intact to their very tips without disturbing the earth in which they are growing, provided the expense involved were of no consequence. It might even be possible to make the transfer in the summer when the trees were completely covered with foliage. The expense involved, however, would be prohibitive as a business proposition, and the operator who would undertake to transplant large trees would necessarily have to consider how he could most nearly meet the ideal transplanting conditions *within the means which the operation might justify.*

Root system of four-year-old apple tree, showing size of block of earth which should be left intact

The methods of transplanting here described cover two general sets of conditions; first, the transplanting of trees which have been growing in the orchard from three to six years and which have a trunk diameter of two and one-half to four and one-half inches; and second, older trees with diameters up to 12 inches.

METHOD NO. 1

In transplanting fairly small trees the work should be done in late fall when the trees are dormant and before the soil is frozen. The soil should be moist but not rain-soaked or muddy. The tree should first be pruned to reduce the total number of buds, so that the reduced root system will have less growth to support the next year. This pruning should consist of a liberal thinning of the small twigs all over the outside of the tree and does not necessitate a systematic heading back of the branches. Where the symmetry of the tree may be improved by heading back, there is no objection to some of this kind of pruning. A general heading back, however, merely defeats the principal purpose of moving the tree because it dwarfs the tree to an unnecessary extent. The total number of buds which should remain on the tree is from 50 to 60 per cent of the original number, and their removal may be effected, as described above, without materially reducing the general size of the tree.

After pruning, a trench 24 inches deep should be dug around the tree. The trench should be nine inches from the trunk for every inch of diameter of the tree. For instance, with a tree four inches in diameter, the edge of the trench should be 36 inches from the tree. While many roots will extend beyond this, the bulk of them will lie within the circle and in the upper two feet of soil.

Severing the Lower Roots

The next step in the process is to cut the roots which extend below the ball of earth into the subsoil. This may be done in either one of two ways. If the operator has only one tree, or, at most, a few trees to transplant, he may free all the roots from the earth by beginning at the edge of the circle and working back from the ends of the roots toward the trunk of the tree. The work should be done with a four-tined manure fork so as to cut as few roots as possible, and the loose earth must be shoveled out of the trench as it is loosened with the fork to give room to work. This is a laborious process, but all the roots may be separated from a ball of earth seven feet in diameter by one man in four or five hours.

A much more expeditious plan, and the one which is advised for commercial plantations, is to break the subsoil roots by pulling a cable underneath the ball of earth by means of a tractor. In sandy loam, medium loam and clay loam a five-eighths inch or three-fourths inch flexible steel cable may be pulled through a seven-foot circle of earth at a depth of two feet with a tractor of medium power. In the writer's work, a five-ton Holt Caterpillar tractor was found excellent for balls of earth of this size. When conditions were just right, the smaller farm tractors were found to be powerful enough to pull a heavy wire or light cable underneath balls of earth up to five feet in diameter, and with a number of successive pulls, the five-ton tractor above referred to was able to pull the cable beneath a circle of earth 10 feet in diameter.

After the lower roots have been broken free from the subsoil, the tree may be moved with considerable of the earth still attached by pulling a large earth grader beneath it and sliding the whole thing to the new location. The illustrations which accompany this article show the way in which this is done. If the distance from the original location to the new one is considerable, it may be necessary to remove most of the earth to avoid expense in transporting the tree, but there is some advantage in preserving as much of the original ball of earth as possible.

Prepare Holes in Advance

The hole where the tree is to be planted must be prepared before the tree is dug. It must be at least 18 inches larger in diameter than the circle of earth from which the roots were removed, as it will be found necessary to have some leeway to arrange the roots in their new environment. The hole must also be equal in depth to the old one. If the tree is moved with a large ball of earth, it will be best to draw the slip containing it to one side of the hole; then detach the tractor and take it to a point at right angles to its former position and across the hole from the tree. The scraper or slip may then be turned around and pulled directly into the hole a few inches ahead of its correct location. The slip is then

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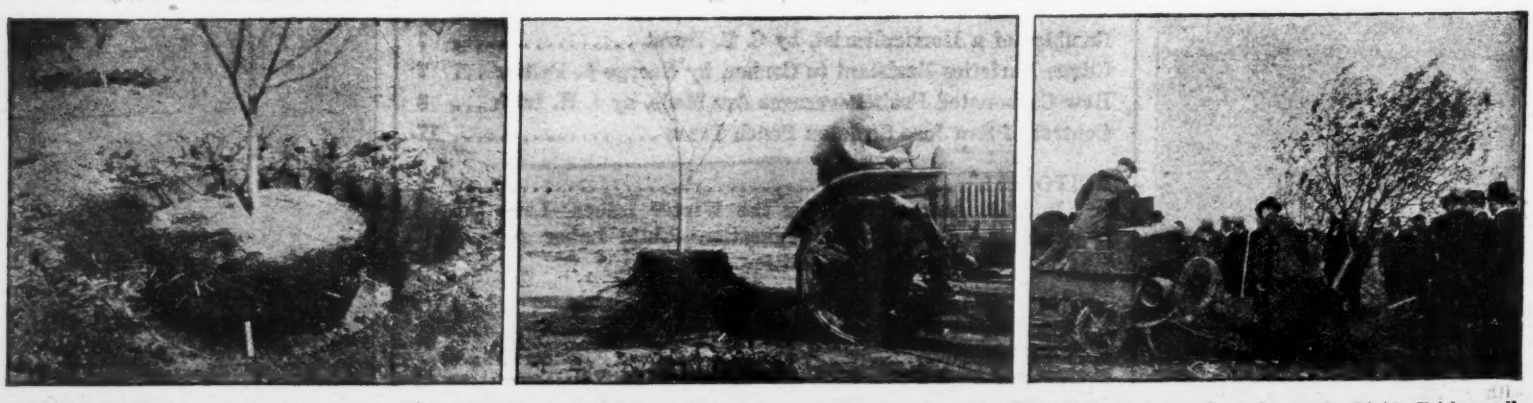

Left—Three-year-old tree ready to have roots cut by cable. Center—Young tree with ball of earth 24 inches in depth. Most of the roots are above this depth. Right—Fairly small trees may be moved with a slip scraper

Training and Pruning Young Apple Trees

by C. D. Matthews
North Carolina State College

COMMERCIAL fruit growers are interested in profits and estimate the degree of their success by the amount of profit secured. Many factors influence the establishment of a successful orchard. Among these, the pruning and training of the trees are extremely important.

With the hope of securing definite information of value for eastern sections, the North Carolina Experiment Station in 1918 established an extensive pruning and training project with apples at the Mountain Station at Swannanoa, near Asheville. The work was confined to the Rome, Winesap, Delicious and Stayman varieties and related to the points of high head, low head, open head, modified leader, and light, medium and heavy annual dormant pruning, which consisted either of heading back and thinning out or thinning out alone. Six years' results have been secured with this work. It is from the standpoint of the results brought out in this project that the present article has been written.

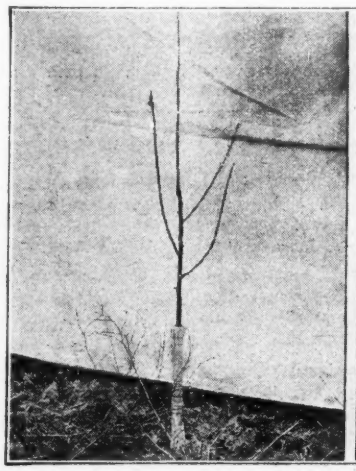

Figure 1—Apple tree properly pruned after one year's growth. Note spacing and distribution of scaffolds and dominance of leader

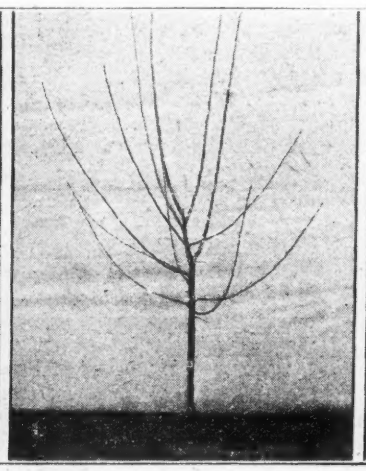

Figure 2—Typical apple tree after two seasons' growth and before the second pruning. Note the development of small twig growth

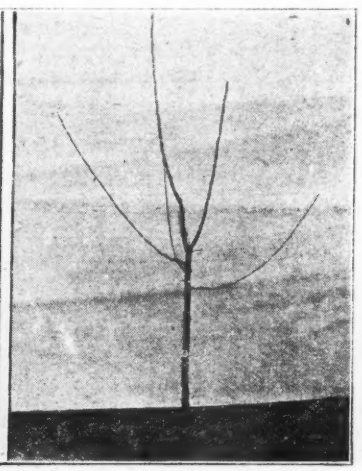

Figure 3—Same tree as shown in Figure 2, after second pruning. Note how leader and certain scaffolds have been headed back and many shoots thinned

Evolution in Pruning

In recent years growers have been kept in a constant turmoil by changing recommendations in regard to types of trees and degrees of pruning. First, we were taught to train trees according to the so-called central leader system. Later the practice was radically changed to the open head type because under this new system more light and air were distributed to all parts of the tree and certain other orchard operations could be performed more easily. This type of pruning developed trees that proved to be mechanically weak. The next evolutionary step was the development of a combination of the two types, known as the modified leader, the type of tree which seems destined to stand the test of time.

From the standpoint of degree of pruning, there was a time when no pruning was practiced. Later, the practice was carried to the other extreme and excessive pruning was practiced. Of course, with open head trees, this was somewhat of a necessity to maintain the particular type. Then, with the development of the modified leader type, the movement seems to have gone back toward the other extreme, for little or no pruning is now recommended in some sections.

Great changes, too, have taken place during the last few years in the training and pruning of young trees. Growers have passed through the period of excessive, heavy pruning and heading back to one in which young trees are given practically no pruning. On the Pacific Coast we have had the development of a system of thinning out, with little or no heading back, known as the "long" system. This has met with popular favor among the fruit growers in this section, and splendid results seemingly have been secured. It apparently is a progressive step in the right direction, because most of the evidence now shows that we have pruned too much. As the pendulum of a movement always has a tendency to swing to the other extreme, it may be advisable for eastern growers to take a middle of the road course rather than go to the other extreme, until more definite information is at hand.

General Recommendations

Commercial fruit growers are primarily interested in establishing an orchard of trees which will come into bearing early, which will be mechanically strong, and which will produce large crops of fruit of high quality. Work at the North Carolina Experiment Station indicates that the best system of training and pruning young apple trees for securing these results consists largely of corrective pruning in the form of thinning out, with a minimum of heading back—heading back only where it is necessary to maintain the desired form of tree. It has been found that the modified leader type of tree lends itself best to this system of pruning and to the achievement of the results sought. There will need to be done some cutting on the young trees in directing their development. This pruning is a training process and not one of modifying the trees' functional activities.

Commercial growers throughout the country have followed the practice of heading back young trees during the first three or five years, under the impression that they were encouraging vigorous growth and stocky trees. Results at many stations show that annual heading back reduces the size of trees. The total growth is less, the leaf surface is reduced and the elaborated food supply is lessened, with the result that the pruned trees are much smaller, with a succulent type of growth that is opposed to fruitfulness.

The pruning of young apple trees is done primarily to modify the form, but nevertheless the functional activities of the trees are greatly influenced. The common advice for years has been to prune trees severely for three or four years after planting in order to develop vigorous and strong trees. Growers have incorrectly thought that the vigorous annual growth following heavy cutting was an accurate index to the general size of the tree. Recent investigations by the North Carolina Station have shown that individual shoot growth is not a true measure of the total growth and enlargement of the tree. Accurate measurements of total top growth and diameter measurements of trunk have shown the two to be closely correlated.

The work at this station has verified the findings of other stations that light pruning is conducive to larger annual growth. Considered from all angles, there is no doubt that the lightest pruning which is consistent with securing a desirable framework is the type which should be employed in bringing a tree into bearing. It has been found at many stations that heavy cutting on young trees during the dormant period will result in disturbing proper balance between the vegetative and reproductive functions to such an extent that the vegetative period will be extended years beyond the time it should terminate, with the result that smaller trees are secured and the time of bearing much postponed. At the North Carolina Station trees that had been lightly pruned possessed a much greater area of spur-bearing wood than trees that had been heavily pruned. Cutting back young trees delayed the formation of fruit spurs and, consequently, delayed early fruitfulness.

Trees need some corrective pruning and growers should not go to the extreme of giving no pruning at all. Light pruning of a corrective nature during the first few years is an aid in properly spacing the framework branches and in keeping them in balance. It also results in a more desirable tree than one that is totally unpruned. In training and pruning young trees, thinning out in preference to heading back leads to the maximum development of tree and fruit. In comparison with heavy pruning, this system results in larger trees at the same age, the admission of more sunlight to the interior of the tree, which stimulates the production of a continuous fruit spur system throughout the tree; trees which come into bearing from one to four years earlier; and trees which are more productive, with better distribution of fruit.

Principles

While pruning is still in an experimental stage and the recommendations on some of the details will change from time to time, there are some general principles that have been proved pretty conclusively and can be accepted by the grower as the basis for his operations.

1. To lessen total growth in any branch or part of the tree, cut that branch or part heavily. To increase total growth in any part, prune that part lightly.

2. Equal cutting back of two branches arising from a common point, and having practically the same amount of growth, will result in equal growth, and unequal cutting back will result in unequal growth. Heading back may maintain or destroy balance between two branches. Two branches of equal length coming from the same place so as to form a sharp "Y" often results in a weak crotch unless preventive measures are used. If these

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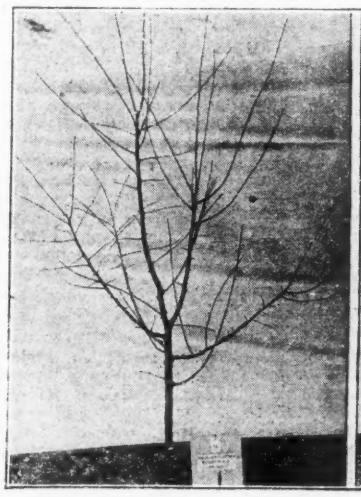

Figure 4—Same tree as shown in Figure 3, after three years' growth but before third pruning. Note twig and spur growth, a condition preceding fruiting

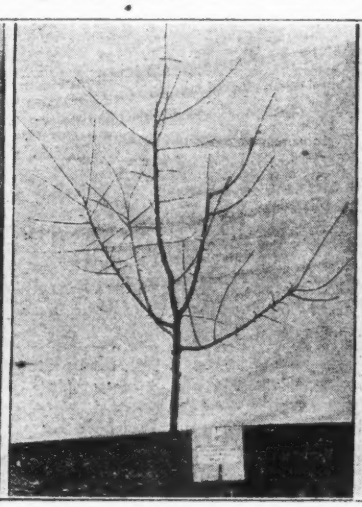

Figure 5—Same tree as shown in Figure 4, after third pruning. Note the balance between scaffolds and dominance of the leader

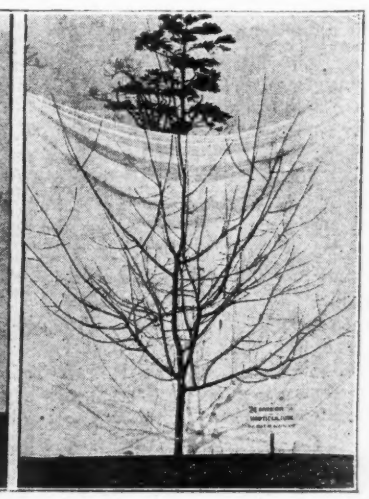

Figure 6—Same tree as shown in Figure 5, after five years' development. Note twig and spur condition and development of additional scaffolds

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In This Issue

WE SHOULD not be doing our duty by our readers or by the authors if we failed to comment about the articles in this issue.

W. S. Perrine, one of the best peach growers in the Middle West—and that's saying something—has furnished a most valuable article on peach pruning. Mr. Perrine has always been keenly interested in pruning, and he has followed the remarkable developments of the past few years along pruning lines. In his article he has outlined these principles and has applied them to the practical problems of pruning from a commercial standpoint.

Prof. B. S. Pickett, of the Iowa Agricultural College, has furnished an interesting and timely article on transplanting large apple trees. Frequently, trees die in a young, growing orchard and should be replaced. Sometimes growers like to take fillers which are quite large and use them for planting new orchards. It is now pretty well established that poor growing trees make weak, unproductive orchard trees, and it is advisable to replace the weak trees after an orchard is three or four years old.

Because of the interest in fruit beverages, we wrote Prof. Cruess, of California, for an article. He referred us to Prof. J. H. Irish, who has given special attention to this problem. We arranged for three articles from Prof. Irish. This is the second, and another will appear in January. The three articles will supply the best known information on fruit beverages.

Dr. George Peltier has done plant pathological work in Wisconsin, Illinois, Alabama, Nebraska and Arizona. While in Alabama, he did a lot of work in connection with the citrus canker problem; in fact, his work attracted so much attention that the Encyclopedia Britannica selected him to write an article on citrus canker for their columns. Last month Dr. Peltier furnished an article on the methods used to bring the canker under control. The article in this issue tells about some canker resistant citrus plants discovered during the eradication campaign.

The pruning of apple trees resolves itself into the problem of shaping and training the young trees and into pruning the bearing trees. In this issue Prof. C. D. Matthews, of North Carolina, presents an article on the pruning and training of young apple trees, which will be helpful to many readers who have recently planted new orchards.

Plans for the Winter Issues

WE HAVE practically all plans completed for the winter issues and we believe we shall present a lot of valuable articles to our readers.

Our first article in January will be a word of greeting from Dr. L. H. Bailey, of New York, who is and has been for many years the greatest American horticulturist. We are sure Dr. Bailey will have something distinctly worth while to say in his article, and we know you will look forward to it with interest.

Besides the pruning articles in this issue, we are going to present other articles by Aucher of Maryland, Roberts of Wisconsin, Long of Oregon and Tufts of California on the pruning of deciduous fruits, and from Hodgson of California on the pruning of citrus fruits.

Our February issue, as usual, will be a special number on spraying. There will be spray calendars covering all the important fruits for every important fruit section of the United States. In addition, there will be special leading articles by prominent authorities. The spraying number has been growing better and larger every year, and we believe the February issue of 1925 will be the best ever presented.

We have had quite a few requests for articles on propagation, and we have therefore arranged for a series on this subject by Prof. W. H. Alderman, of Minnesota. We also have some excellent articles engaged from such men as Hedrick, Sears, Darrow, Ackerman, Headlee and others.

We shall include reports of important developments in as many horticultural meetings as possible. The Editor is planning to attend as many of these meetings himself as he can in order to obtain first-hand information.

Let's Co-operate

AS A READER of the American Fruit Grower Magazine you want the magazine to contain the most dependable, the most complete, and the most up-to-date information on fruit growing. The owners want to make the magazine as good as possible so they can make fair returns on their investments and have the satisfaction of putting out a good paper. The Editor wants the magazine to succeed so that he can hold his job and, in addition, he has a personal ambition to make the magazine as worthy as possible of the great industry it represents.

Many of our friends and readers have said some very nice things about the magazine. Hardly a suggestion of complaint has been received. We appreciate these things very much, but even at that, we are not entirely satisfied. We want to make the magazine better, if that is possible, and we believe it is. Anyone who becomes completely satisfied with things as they are, and has lost all desire for improvement, is ready for the shelf. When a proposition stops advancing, it is about ready to move backward.

It seems, therefore, that we are all in the same boat. We all want the best magazine possible, even though we may have different objects in view. Now, by working together, we can attain the desired goal, and the Editor is going to suggest a method by which the result can be accomplished.

The success of any publication depends on its subscription list. The more subscribers there are, the greater will be the income of the paper. The greater the income, the more money can be spent in developing and enlarging the magazine. In short, if all of us work together to increase the subscription list, we can secure a better and larger magazine.

If you agree with this proposition, we ask just two favors of you as your part in the deal. If you will do these two things, we agree to do the rest. First, tell your neighbor fruit growers about the magazine and try to interest them in subscribing. Second, send us the names and addresses of 10 or 15 fruit growers in your vicinity. Our Circulation Manager is a regular go-getter, and he will soon have the prospects on the subscription list, unless they are altogether impenetrable.

If you will grant us these favors, the Editor agrees to do everything in his power to improve the magazine. The owners agree to devote a liberal proportion of the funds toward improving and enlarging the magazine. Won't you be good enough to get your pen or pencil right now and send us the list of names and addresses?

A Christmas Suggestion

IN A FEW weeks Christmas will be here. No doubt you have already been wondering what kind of presents you will give certain relatives and friends.

Why wouldn't it be a good thing to send the American Fruit Grower Magazine to some of these people? We believe it will prove itself a worthy present. It will remind the receiver of you the first of every month, and probably many more times during the months. It will give him, or her, the best and most up-to-date information on fruit growing. It will help your friend or relative to do his work better and to make more money; for these things, he will be thankful to you.

The cost is very reasonable. We shall send the magazine to any address for three years for one dollar, or if you desire, we shall send it to three parties for one year each at a total cost to you of one dollar. If you desire, we shall also send a letter to these folks and tell them the magazine will come to them regularly as a Christmas present from you.

Child Labor Amendment Meeting With Opposition

PRACTICALLY every agricultural paper and every agricultural organization have expressed themselves against the child labor amendment. It is encouraging also to note that opposition is coming from many unexpected sources. The *Chicago Daily News*, for instance, printed the following editorial on November 8:

"Nearly all the state legislatures that have given consideration to the so-called child-labor amendment to the federal constitution—they are relatively few in number—have acted adversely upon it. In Massachusetts, however, the legislature, seeking the guidance of the people, submitted to a referendum at last Tuesday's election the question of approving or rejecting the amendment. The people's answer was unmistakable. Doubtless it is a fair indication of what the answer of the people throughout the country would be were the question submitted to them for action and fully debated.

"Returns from about 90 per cent of all the precincts in Massachusetts show virtually 223,000 votes in favor of the amendment and 639,000 votes against it. The people of that commonwealth stand, therefore, almost three to one in opposition to the proposal.

"Unquestionably the people of the United States are in favor of protecting children from the effects of injurious labor, and would gladly support proper measures to that end. It should not have been difficult to draft a constitutional amendment giving congress the power it now lacks to pass a child-labor law similar in purpose to the two measures annulled by the Supreme Court as not being in harmony with the nation's basic law. Those measures applied to children under 14 years of age and their employment in factories or other industrial establishments. The pending amendment would give congress absolute authority to legislate into idleness all Americans up to the age of 18.

"Supporters of the proposed amendment contend that congress never would exercise the full authority thus to be bestowed upon it, but would pass a reasonable and desirable child-labor law. The record of congress affords no basis for that soothing assumption."

Fruit growers are people with a great deal of influence, as a rule, and we suggest that you communicate at once with representatives and senators in your state legislature and exert all the influence you can against this amendment. Let us not be of the right conviction only in this matter; let us crystallize our thoughts into action.

Rambles of a Horticulturist

by C. E. Durst

EVEN if the Wolverines were unable to handle "Red" Grange and his gang down at Urbana on October 18, one can always get a good fruit story over in Michigan. I made a short trip over there recently and saw several interesting things that I want to tell our readers.

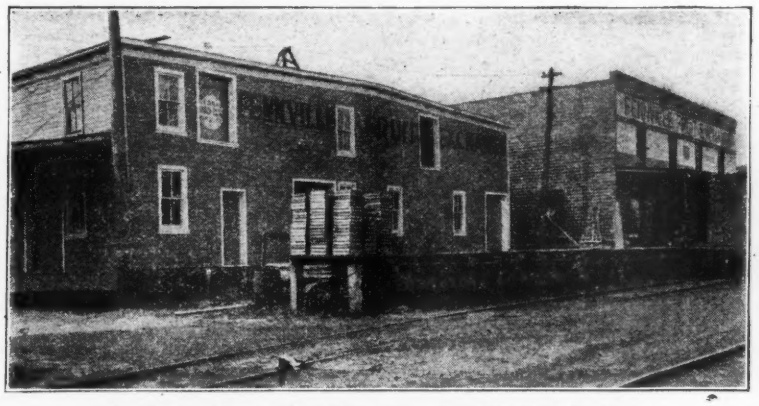
The Baldwin Plant Farm

I drove over from Chicago by auto, for that is the best way to see any fruit section. I first stopped at the O. A. D. Baldwin plant farm at Bridgman. This firm has made wonderful progress in recent years and has built up a splendid organization and a good business. The company is growing strawberry plants on several farms near Bridgman. Some plants are also produced elsewhere, particularly bush fruits. Raspberry plants are being grown in abundance. Bramble streak has given some trouble, but this disease is said to be practically eradicated now. The company has a splendid building for office and warehouse purposes.

Fruit Conditions in General

Proceeding along the lake, I made a brief stop at the office of the State Department of Markets at Benton Harbor and there obtained first-hand information about the shipments and fruit conditions. At that time the grape shipments were just starting. The season was fully three weeks late and everybody was worried about frost. In their anxiety, many growers wanted to pick grapes green, but Supervising Inspector W. H. Esslinger held rigidly to the ruling against shipment of green fruit. While there was some kicking, practically all the growers knew it was a good thing to follow the rules, and hence there was little trouble in getting the rulings respected. The department has performed a real service for Michigan growers in establishing grades and standards and in supervising shipments.

Packing apples at the South Haven Fruit Exchange



Supply warehouse and packing plant, Fennville Fruit Exchange

The Middle West has had a remarkable fall this year. The Michigan grape crop matured practically without damage, although the quality was not quite up to the standards of some years. The crop sold for excellent prices; in fact, the price of $60 per ton at the opening of the season caused so many growers to sell direct that the co-operative associations, which operate mostly without contracts, had a hard time to get products to handle. The shipments of grapes from Michigan totaled 4102 cars to November 1, as compared with a total of 4213 cars shipped last year.

The peach and apple crops were also short this year because of the severe frosts in Michigan last spring. The carlot shipments of peaches to September 30 amounted to 37 cars this year, as compared with 1087 cars last year. Of apples there were 2476 cars shipped to November 6 as compared with 7069 cars shipped last year.

Barrien County Association

I made a brief stop at the Berrien County Fruit Growers' Association at Coloma. W. A. Enders has been manager for several years. The association was $8000 in debt when he took charge. If the business were closed out now, all obligations could be met, and the business would show a balance. The association has one packing plant and one warehouse for supplies, worth about $4000 each. About $112,000 worth of supplies were handled the present season. Formerly it was necessary to use growers' notes to secure the necessary loans, but the reserves and regular credit of the association are now sufficient to meet the needs.

The buying of supplies is proceeding nicely, but the marketing is not. When products are hard to sell, growers bring them to the association, but in times of shortage and when buyers are active, growers like to sell directly. Since there are no contracts, growers use the association when they want to and ignore it when they prefer. Mr. Enders has done an excellent work and the members should appreciate the services of such a man and support him in his work.

(*Continued on page* 11)

Roller carriers in the Fennville Packing Plant

Citrus Varieties Resistant to Canker

by George L. Peltier

University of Nebraska

SOON after the citrus canker eradication campaign began in the Gulf Coast states, and, of course, long before its success was assured, steps were taken to determine the susceptibility and resistance of the wild relatives, citrus fruits, and hybrids of the genus Citrus. This was done in order that there would be available, if the campaign was not successful, information regarding the relative resistance of citrus plants to canker, so that the more susceptible plants could be replaced by resistant varieties.

For 25 years Walter T. Swingle, of the United States Department of Agriculture, had been gathering together from all quarters of the world all the species and varieties and wild relatives of Citrus he could find. At the same time, he was engaged in making numerous crosses, so that by the time citrus canker was found in this country he had growing in various localities the largest single collection of citrus plants in the world.

It was the writer's good fortune, while connected with the Alabama Station, to have an opportunity to study the canker resistance of most of these plants. This was done in the greenhouse at Auburn, Ala., and in an isolation field in Baldwin county, during the years 1916-1921.

The Isolation Test Field

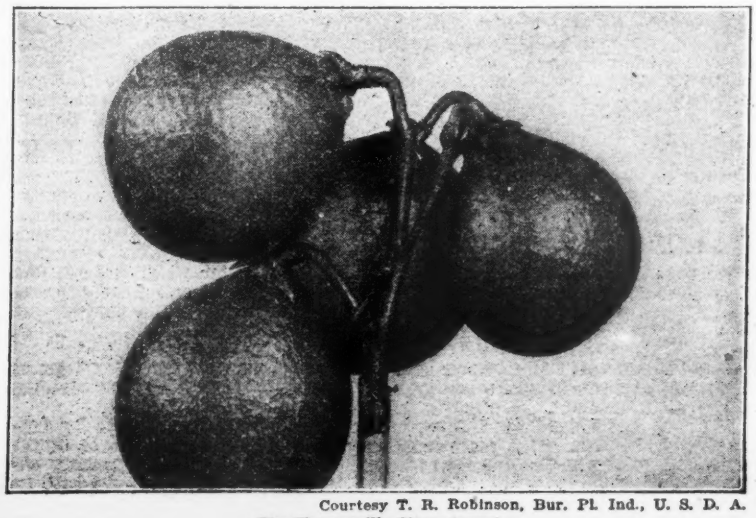
Of course, all precautions to avoid the spread of the disease were taken. It will be a long time before the writer will forget his frequent trips to the isolation field. About half the time we lost the trail in the piney woods, and occasionally during high water we fished the flivver from the bottom of the creek, and if our gas tank was not completely filled, our emergence from this creek bank was made backward. When the officials from Washington came down to consider the advisability of maintaining an isolation field, we obtained their consent soon after we forded the creek and passed over the corduroy road and lost ourselves. I'll say the field was isolated.

The field consisted of a clearing on a knoll in the piney woods about one acre in extent. Here the plants sent to us by Mr. Swingle from Washington were planted in rows across the field, and tests on their resistance to canker were begun. During the first year or so, the plants were inoculated with pure cultures of the organism. However, when canker had established itself in the field, natural infection from adjoining plants was counted on entirely, except for some few of the more resistant varieties.

Here, also, we carried out our experiments on the life history of the organism, conducted overwintering studies, and studied relation of environment to the disease.

Wild Relatives of Citrus Not Susceptible

Of the wild relatives of Citrus, only a few that can be grown under our Gulf Coast conditions and that have some definite use in the citrus industry will be mentioned. As far as the susceptibility to citrus canker in this country is concerned, with the exception of the trifoliate orange now used extensively as a stock for Satsuma, none of the relatives of Citrus, native or introduced, are susceptible enough to warrant further attention. It is of interest, however, to know that citrus canker is not limited in its attacks to the genus Citrus, but that it can produce, under certain conditions, infection on a wide range of plants in the family to which Citrus belongs. In this connection, the plant breeder of this and other countries is furnished facts which may assist him in developing hybrids of a commercial nature which are resistant to citrus canker.



Courtesy T. R. Robinson, Bur. Pl. Ind., U. S. D. A.
The Thomasville Citrangequat

Severina trifolia, a dwarf tree native to South China, introduced into Europe and recently into America, has proved to be non-susceptible to canker in all of our tests. This plant thrives under South Alabama conditions and its propagation as a hedge plant to replace the trifoliate orange should be encouraged. It also thrives in soils too salty to permit Citrus to grow and for this reason is being tested as a stock for Citrus. No doubt it will become a useful plant when its qualities have been determined.

The kumquats have in certain states already found a niche to fill in the citrus industry. All varieties now grown in this country are very resistant to canker, and it is only when the leaves are badly injured that infection will take place.

Trifoliate Orange Very Susceptible

The only bad actor among the wild relatives of Citrus is the trifoliate orange. At the present time, it constitutes the biggest obstacle in the final eradication of canker. The

(*Continued on page* 21)

How Carbonated Fruit Beverages Are Made

by J. H. Irish
University of California

IT IS said that the training of a child should begin with his grandfather. For a first-class fruit product, one should start with good fruit. The better the quality of the fruit, the better will be the product made from it. This may not be evident in the finished product without a standard for comparison, but I think we shall all agree that a large, ripe, perfect fruit tastes better than a small, gnarly fruit of the same variety.

Cultural methods and climatic conditions are factors which almost entirely control the quality of fruit. For intance, fruit which is irrigated excessively late in the season will be large and will have juice with lower sugar content and poorer flavor than fruit ripened with less water. Fruit ripened where the water supply is very limited will be small but with a high sugar content and rich flavor. Frost bitten fruit deteriorates rapidly and yields juice of inferior quality.

The question which naturally arises is, "What is normal fruit of any given variety and what conditions are necessary for the best development of that fruit?"

Considerable work has been done on standardization of fruits so that with many of our fruits definite standards have been adopted by which the grade of any variety of fruit grown in a certain locality may be determined. Cultural methods which will produce fruit nearest to this standard should be adopted.

Selecting and Harvesting Fruit

It is the desire of every fruit grower to produce perfect fruit only. In spite of all precautions in cultural methods, there will still be some undergrade fruit. By undergrade we mean slightly blemished, undersized, oversized or malformed, though sound, fruit. Unsound fruit should never be used Because it is impossible to obtain a good product from bad fruit. Decayed or wormy fruit should never be used.

Sorting

Facilities for proper sorting and inspection should be provided. When fruit is delivered to the plant and used immediately, this work can be done in the field or orchard as a part of the regular grading operations. If fruit is to be stored and held for some time before using, an additional sorting will be necessary for the removal of fruits spoiled during storage.

The importance of washing cannot be over-emphasized. Everyone appreciates and desires a clean product. Clean fruit facilitates the operations of filtration, clarification and preservation, all of which are important items in the manufacture of fruit juices. If fruit has been grown under especially favorable conditions, away from dusty roads, and is free from blotch, mildew, mold and other contamination, and has been kept clean, washing may be dispensed with. Such conditions, however, are very rare.

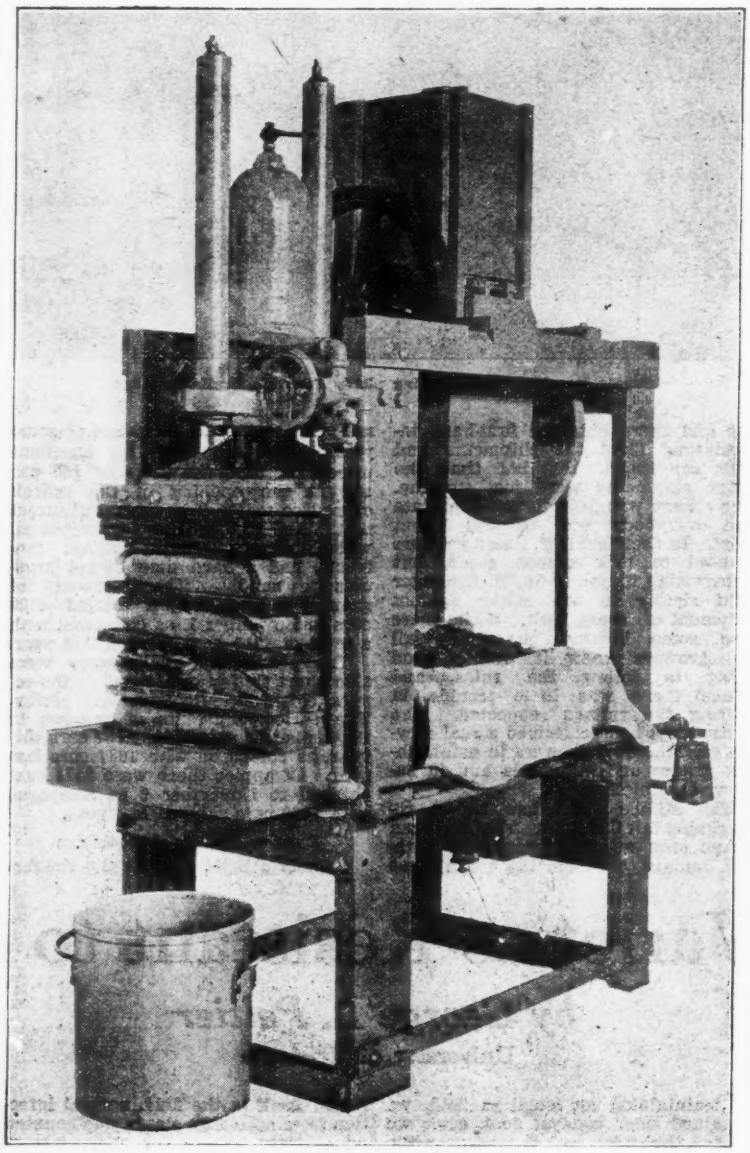
Fruit of a hardy nature, such as apples, citrus fruits, pomegranates, etc., which permit of rough handling, may be washed by the washers in common use in citrus packing houses. The more perishable fruits, such as grapes, berries, and cherries, which will not stand such rough treatment, should be washed by a machine with a spray system similar to that commonly used for washing tomatoes. Berries and grapes grown by the dusty roadsides are very apt to be sandy and muddy or dusty. This dirt adheres to the rough surface and is difficult to remove except by washing.

For handling fruits on a small scale at home, washing may be accomplished by using tubs and screen trays, both of which are easily available.

Crushing

The operation of crushing varies greatly with the nature of the fruit and is accomplished for the purpose of releasing the juice more readily from the cells or juice sacs.

For the extraction of apple juice, crushing is a very important operation. The machine commonly used for this purpose is the apple grater or crusher. There are different sizes of machines, consisting of (1) small hand power machines for home use; (2) medium sized machines for community use, operated by hand lever or by machine power; and (3) large commercial machines with a capacity of 10 to 30 tons a day.



Hydraulic press and fruit crusher in Fruit Products Laboratory, University of California

For the most efficient extraction of apple juice, the fruit should be crushed to pieces one-eighth to one-fourth inch thick. The size of pieces can be regulated by adjustment of the rolls.

This grater or crusher consists of a steel cylinder from six to eight inches in diameter, on the surface of which is set a row of knives extending the full length of the cylinder. Parallel with the cylinder is a set of upright knives, or a fluted steel plate towards which the cylinder revolves. The fruit in passing between these knives and cylinder is shredded or grated.

The apple grater may be adjusted for use in crushing grapes also. For crushing grapes and other soft fruits, the roller crusher is in common use. In a modified form, it is also used for crushing citrus fruits. It consists of two fluted cylinders which revolve towards each other. They are placed in the same plane in a horizontal position, above which is a hopper. The fruit passes downward between the rolls and is crushed by pressure. When used for crushing grapes, it may be attached to a stemmer by which the stems are removed from crushed grapes.

Repressing

In the production of apple juice, repressing is a very important step in the process. A 50 per cent increase in juice yield is often obtained by this operation.

The pomace obtained by the first pressing is macerated by means of the pomace picker, which grinds it to a meal-like consistency, and it is then pressed again. The juice obtained by this second pressing has a darker color, a higher sugar content and more astringency than that from the first pressing. This is especially good for vinegar manufacture because of the high sugar content. It may be used also for blending with juice from the first pressing.

The increase in yield through the use of the pomace picker and repressing will in a short time pay for the machine and the extra expense of this operation.

The continuous crusher and press type is especially suitable for crushing berries and cherries.

The pomegranate, which is developing into an important juice fruit, requires little or no crushing. Any operation which macerates the peel to extract an excess of the tannin is undesirable.

Citrus fruits may be crushed by the roller crusher, when there is no objection to the extraction of oil from the peel with the juice. This oil may be separated from the juice subsequently by means of a cream separator. Citrus fruit juice is commonly extracted by means of a conical spindle extractor, in which case no crushing is required.

For citrus fruits and other fruits of similar character, such as pomegranates, all receptacles should be made of non-corrodible metal, such as silver, blocktin, monel metal, bronze or glass. Juices coming in contact with iron, zinc, lead and other corrodible metals are impaired in color and flavor and may be injurious to the health.

Heating

The main purposes of heating are to extract color, to increase yield, and to facilitate filtration and clarification. The color element of many fruits is located in the skin. In order to liberate this color, it is necessary to heat the fruit. Red grapes, berries and cherries are in this class. Apples, white grapes and other fruits, from which the juice is desired for flavor, are not heated before pressing.

It has been found that heating the crushed fruit to 160 degrees Fahrenheit is sufficient to liberate the color. Heating weakens the cell walls, causes a more complete release of the juice, and produces a higher yield. Heating has a tendency to destroy the fresh flavor of the aromatic fruits, such as citrus fruits, muscat grapes and other flavor grapes. Heating coagulates the protein in fruit juice and facilitates filtration and renders permanent clarification possible. If this heating is to a temperature equal to or greater than that of the final pasteurization temperature, a permanently clear juice may be obtained. The coagulated protein is removed by filtration. If the final pasteurization temperature is higher, a further coagulation of protein occurs, which will appear as a cloud in the finished product.

Pressing

There are two general types of presses in common use in the fruit juice industry, the "cloth and rack" type and the "basket" type. These designate the way the fruit pulp is handled. Other types are designated by the manner in which the pressure is applied in pressing, such as the beam press, screw press and hydraulic press, all of which are discontinuous. Another type is the continuous press, into one end of which the fruit is fed, and to which pressure is applied. The pomace is discharged continuously at the opposite end of the press, while the juice passes through openings in the bottom. For apples and berries, the rack and cloth type is most commonly used. A pressure of several hundred pounds per square inch is applied. The apple pomace, after the first pressing, is run through the pomace picker, which grinds it up finely, and is repressed. There are small presses of both of the above types available for home use or for small commercial scale production.

Pressing the Pomegranate

Because of the peculiar nature of the pomegranate, it requires different treatment than any other fruit. The color of the pomegranate is in the juice, therefore it does not require heating for the extraction of color. Because of the high tannic acid content of the peel, it is not desirable to extract the juice from the peel. The less the peel is broken or crushed, the less tannic acid there will be in the juice.

For a long time the greatest obstacle in the way of producing a palatable beverage from pomegranates was the astringency, due to an excess of tannic acid. By crushing with the machines ordinarily used, the peel was so macerated as to extract an excess of the tannic acid with the juice. By

(*Continued on page* 15)

Transplanting Large Apple Trees

(*Continued from page 4*)

pulled out backwards, leaving the tree with the ball of earth as nearly in its correct place as possible. After this, some hand work is usually required to align it exactly.

As the earth is thrown into the hole, the roots should be arranged so that they are not all in one plane, but at approximately the same depths and positions as in their original location. The earth should be firmed by tramping and tamping, and after the hole is filled, the earth should be mounded to a depth of three or four inches above the surrounding level to allow for settling and to turn away surplus water during the first winter.

METHOD NO. 2

This method is based on the premise that a ball of earth is not essential to the successful moving of large

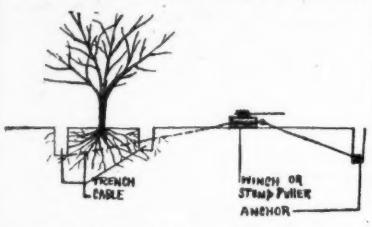


Diagram showing arrangement for cutting earth and roots free from subsoil

apple trees, but that the essential requirement is the prompt moving into favorable soil of an adequate root system. An adequate root system can be obtained by including all the roots within a much larger circle of soil than can be handled by the ball system, and the essential element in doing the work is sufficient power to break the subsoil roots and loosen the whole root system without destroying it. The author does not advise the commercial transplanting of trees more than 12 inches in diameter, and he would prefer not to go beyond trees nine or 10 inches, except in those cases where expense is no object.

The distance at which the encircling trench should be dug may be determined in practically the same way as in the case of the smaller trees, but it will be found satisfactory and considerably cheaper to gradually de-

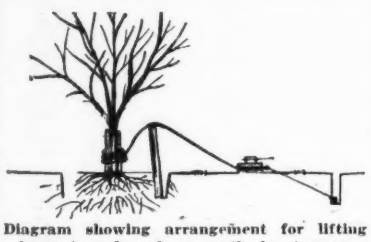


Diagram showing arrangement for lifting large tree free from earth for transportation to new location

crease the allowance per inch of tree diameter. Approximately, the following distances will be found satisfactory:

Truck Diameter.	Diameter of Circle.
5 inches	8 feet
6 inches	9 feet
7 inches	10 feet
8 inches	11 feet
9 inches	12 feet
10 inches	13 feet
11 inches	14 feet
12 inches	15 feet

The trench should be dug 27 to 30 inches deep instead of 24 inches, and the roots must be cut with a three-fourths-inch cable.

How Roots Are Severed

The best power to draw the cable beneath the ball of earth is a powerful winch. The writer has used a Hercules stump puller for this purpose with entire satisfaction. To operate it a "dead man" must be sunk to the level of the bottom of the trench to furnish an attachment for the winch. A very powerful tractor could be used and much time saved, but it is difficult to operate a tractor sufficiently large where the trees are as close together as would probably be the case in an orchard which was to be thinned. A 10-ton Caterpillar tractor is, however, powerful enough to draw a cable readily through a 10-foot ball of earth at a depth of 27 to 30 inches and cut any roots of the size which would be found attached to a tree with a trunk diameter of eight or nine inches.

After the ball of earth has been broken from the subsoil and the deeper roots have been severed, the root system must be freed from earth. To accomplish this easily, it is very helpful to do the work when the ground crumbles readily on being disturbed. In sandy soil, the earth may be removed readily at any time, but if the soil is heavy it will cling to the roots when either too dry or too wet. The act of drawing the cable through the soil helps greatly to crumble it and reduce the amount of work necessary before the tree can be lifted from its old position. After pulling the cable through the soil, all the earth may be loosened to a distance of 12 or 14 inches from the edge of the circle by means of four-tined manure forks. It is then necessary to lift and pull the tree free from the remaining earth by hitching a cable to the trunk of the tree and pulling it out bodily.

Removing the Earth from Roots

To pull the tree free from the ball of earth in which it is growing, the trunk must be wrapped first with burlap three or four layers in thickness. Around this should be placed a straw or excelsior pad about an inch thick. This pad should be of strong canvas or heavy burlap and should be felted so that the straw cannot slip inside it. This must be strapped or roped tightly in place outside the burlap. Last of all, there should be a protecting sheath of narrow boards placed vertically around the tree trunk. If much work is to be done, these should be wired together so that they may be put in position quickly as each tree is being moved. Around the protecting boards, the lifting rope or cable should be fastened securely in such a way that it cannot slip. The tree should be pulled from its position by a lifting motion, which can be secured by carrying the pulling cable over the

(*Concluded on page 28*)

Training and Pruning Young Apple Trees

(*Continued from page 5*)

branches are headed back the same, it will not better the condition, but if one branch is headed back more than the other, it will encourage the longer branch to grow more and eventually become the leader or main branch and the shorter one a lateral or side branch. The main object is accomplished of strengthening the crotch and avoiding splitting in later years.

3. Generally speaking, the greatest growth response takes place in the immediate vicinity of the pruning wound. This is noticeable where a large branch has been removed, for near the point of removal there is formed a number of water sprouts. It is noticeable where a branch is cut back that usually a few lateral branches will develop near the bud. However, some response may be noted throughout the entire limb.

4. Conserve fruiting wood. The first fruit of a tree is borne on the fruit spurs and short shoots from young trees, especially from the scaffold limbs. Many pruners do not realize the importance of this wood and remove all of it, and as a result the tree does not come into early bearing. Other pruners think this wood will grow and be in the way in later years. This wood seldom grows more than a few inches in length and can be shortened if it does grow more. It certainly pays to leave a large supply of this wood.

5. In all pruning and training work, the pruner must have a vision of how the tree will look in future years. A mental picture should be made of how each branch will look and how much space it will occupy when fully grown. Thus, two parallel branches with 12 to 18 inches between them will eventually crowd, and one should be removed early. Also two branches crossing each other five or six inches apart near the body of the tree will in time cause crowding and splitting, and should be removed early.

6. Pruning influences to a definite degree growth and other functional activities of the tree. It influences to a degree the character and proportion of stored food within the tree. The work of Krause and Kraybill and later Harvey and Murneek indicates that the behavior of a plant as regards growth and reproduction depends on the proportion of valuable carbohydrates and nitrogen. Fruit buds are apparently developed as a result of an abundance of carbohydrates in proportion to nitrogen in the buds in which the flower parts develop.

Building the Modified Leader Type of Tree

This type is a combination of the open head and the central leader type of tree. In general it is developed by training the tree to the leader type for the first four or five years, and from then on treating it as one would the open head. The tree is lowheaded, spreading, and with six to 10 scaffold branches distributed along and about a central stem. It is not possible to secure the several scaffold limbs from one season's growth and have them properly distributed and in proper balance, so the selection must extend over some three or four years, starting two or three new scaffold limbs each year. After the proper number and distribution of scaffold limbs has been obtained, the tree should be opened by discontinuing the leader. Two types of the modified leader tree are found and will probably occur in any orchard where the system is used. One of these types has a central stem with the main scaffold limbs evenly distributed around and up and down it, while the other has a trunk with either two or three whorls of about three scaffold limbs each, with more space between the whorls than between the individual limbs. This type is described as a two or three story tree.

In attempting to train trees so that they will closely approach his ideal, the grower will find many difficulties, some of which are impossible to overcome, but it is well for him to select one of these types as his ideal and try to conform to it.

If a one-year-old whip has been planted and headed at 28 or 30 inches, the first year's growth will usually consist of an almost upright shoot produced from the uppermost bud and four or five shorter ones arising from lower buds. In this case, two or three of them well distributed about the trunk, and six to eight inches apart, should be selected in addition to the uppermost one, and the others removed. If the leader is properly dominant and the two scaffolds are balanced and not over 24 inches long, they need not be headed back. If too long or not balanced, they should be cut to balance and the leader shortened.

With the second pruning, the leader should be treated in much the same manner. The scaffold branches will probably have produced several laterals. The central stem of each scaffold should be kept properly dominant either by thinning out or by heading back the laterals. Two or three more scaffold branches should be selected above the top lateral scaffold and the tree opened similar to an open center tree. Subsequent pruning should maintain the framework in proper balance and keep the tree open to allow entrance of sunlight.

The pruner should develop the several scaffold branches carefully. They should be handled from the standpoint of the tree as a whole and also with regard to the relation of the main branches to each other. If certain scaffolds are outgrowing others, the stronger growing ones should be headed back. If the lower scaffold branches are not developing sufficiently, the upper ones must be cut back to prevent the lower ones from becoming suppressed as real scaffolds and the tree thrown out of balance. All main branches of the tree must be properly dominant and their balance carefully preserved. Any fruit spurs developed in the middle of the tree during this time should be left. It is on this growth that some of the first fruit of the tree will be produced.

Trees need some corrective pruning, and growers should not go to the extreme of giving no pruning at all, for there will need to be some on young trees in directing their development, but this should be the least amount consistent with the proper spacing of the framework branches and keeping them in proper balance. The cutting should be restricted to corrective pruning in the form of thinning out, with a minimum of heading back,—heading back only where it is necessary to maintain the desired form of trees. (Thinning out means the removal of the entire shoot or branch, while by heading back is meant cutting off a part or reducing the length of a particular shoot or branch.) In actual practice, heading back of certain branches will be necessary to preserve balance between the scaffolds, but this should be held to a minimum. Trees developed by this type of pruning will appear too willowy or "leggy." However, this is more apparent than real, and these trees will be larger, stronger, and will be bearing crops several years before trees that have been severely pruned.

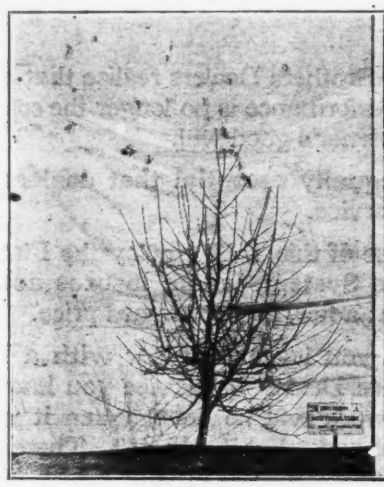


Figure 7—Five-year-old tree after fifth pruning, severely headed back each year

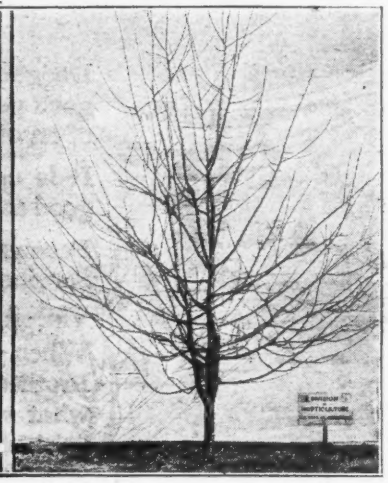


Figure 8—Five-year-old apple tree lightly pruned throughout its existence

Effects of heavy and light pruning on trees of same age

Figure 9—Five-year-old Stayman tree lightly pruned. Note size of tree. Other trees of same age, heavily pruned, as in Figure 7, produced no fruit

Figure 10—Fruit from tree shown in Figure 9

Non-Leguminous Plants Can Appropriate Nitrogen

EVER since it was discovered that leguminous plants, through bacteria living in nodules on their roots, were able to appropriate the free nitrogen of the air, there has been a question as to whether or not non-leguminous plants could extract nitrogen from the air. Many scientists have held that they could not.

Dr. C. B. Lipman and J. K. Taylor, of the University of California, have recently reported experiments which seem to show that certain non-leguminous plants under culture were able to extract nitrogen from the air. The authors do not believe the nitrogen was first fixed by bacteria and then appropriated by the plants. They believe the nitrogen was fixed directly by the plants, probably in the cells in the green leaves.

This discovery is of important economic significance. If non-legumes can fix even small amounts of nitrogen, it is significant from the standpoint of soil fertility and from the standpoint of feeding the people. If non-legumes can fix nitrogen, some kinds and varieties can probably fix more than others. From a practical viewpoint, it will be desirable to determine which ones can fix the most so that we can then emphasize these in food production.

A. F. B. F. Plans for Annual Meeting

THE SIXTH annual convention of the American Farm Bureau Federation will be held at the Congress hotel, Chicago, December 8-10. In addition to the usual general meetings, it is planned to divide the board of directors into six sub-committees, each of which will meet between regular sessions and give attention to an important special problem. The reports of the various sub-committees will later be co-ordinated at a meeting of the directors as a whole, after which a report, with recommendations, will be made to the convention.

As usual, reports will be received from the various officers. The annual banquet will be held Thursday evening.

SINCE the Florida Citrus Exchange was organized, it has collected claims for growers amounting to $807,758.59. During the past year, $95,217.03 were collected for growers.

In addition to collecting claims, the traffic department supervises the routing, selection of diversion points, car supplies, etc.

Rambles of a Horticulturist

(*Continued from page 7*)

The Wadsworth Fruit Farm

In company with J. A. Barron, I visited the orchard of D. W. Wadsworth, near Fennville. Mr. Wadsworth is a director of the Fennville Fruit Exchange. He has 50 acres of mixed orchard and shows excellent judgment in not placing all of his eggs in one basket. He was one of a few growers who had a good crop of peaches this year. The apple crop was light, and the plums had already been picked. The apples particularly showed that finish and glossy appearance which always indicate good cultural conditions. The orchards were cultivated throughout. Because of the sandy nature of the soil, nitrate and other fertilizers are used on most of the orchard.

Cherry tree with excellent foliage late in the season, the result of proper spraying. D. W. Wadsworth farm

An interesting example of the benefits derived from proper fertilization and cultivation of plums was in evidence. Mr. Wadsworth applied five pounds of 16 per cent acid phosphate and two pounds of nitrate of soda to each tree early in the spring. He practiced clean cultivation throughout the season. The foliage showed excellent condition. A given number of Shropshire Damsons taken at random from one of Mr. Wadsworth's trees weighed exactly twice as much as the same number selected at random from a neighbor's tree just 30 feet distant, there being no fence between. The neighbor's trees received no fertilizer and were not cultivated until July.

Mr. Wadsworth was very successful in controlling cherry leaf spot. His trees were in fine foliage practically at the end of the season, as shown in the picture, while hundreds of other cherry trees in the vicinity were practically completely defoliated. Such differences ought to affect the fruiting results next year. Mr. Wadsworth sprayed his cherries with Bordeaux when the blossoms were in the pink bud stage and again just after the fall of the husks.

Mr. Wadsworth's peaches showed considerable shot-hole fungus. He was inclined to blame the spraying methods. He used New Jersey drymix. I am inclined to believe that the fertilizer treatment did not supply a well-balanced ration, for shot-hole fungus seems to be closely related to the nutrition of the trees. My suggestion is that the fertilizer treatment be varied in such cases until a method is found which will result in less shot-hole damage.

Cluster of McIntosh apples grown by D. W. Wadsworth

Mr. Wadsworth is an inventor as well as a fruit grower. He has invented a machine which will face a barrel of apples and thus relieve packers from hanging their heads down into the barrel and working in the dark. The machine works quickly and easily and appears to have real merits. The essentials have been patented but certain features will be further perfected before the machine is placed on the market.

The Fennville Fruit Exchange

A most interesting visit was made to the Fennville Fruit Exchange, which is one of the best local organizations to be found anywhere. The story of this organization is given in this issue in the department "With the Co-ops."

The Michigan Marketing Situation

One cannot visit Michigan without coming in contact with the marketing situation. For years the state has had a large number of local associations, most of which have well-constructed and well-equipped packing houses. A number have been putting out an excellent grade and pack. All but a few locals, however, have operated without contracts. As a result, growers have used the associations when they wanted to and have ignored them when they preferred.

Last year, after a lot of hard work by the state extension department and many individuals, about 20 locals were federated into the Michigan Fruit Growers, Inc., and membership was taken out in the Federated Fruit and Vegetable Growers, Inc. The year's results proved disappointing, however, and the organization withdrew from the Federated at the close of the season. The Southern Michigan Fruit Association, at Lawton, which never joined the Michigan Fruit Growers, Inc., is still marketing through the Federated.

This season the Michigan Fruit Growers, Inc., set up its own sales service and employed F. L. Granger as sales manager and J. A. Barron as field service manager. While the difficulties of last year are still a handicap, the greatest obstacle is probably the conditions under which the exchange must operate.

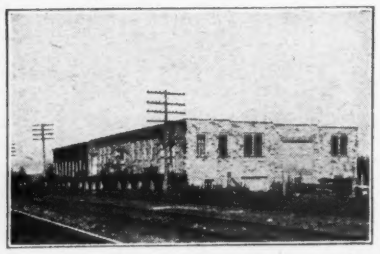
As stated, most locals have no contracts with their members. Most locals reserve the right to sell part of their products in their contract with the central. In a season like this, when the crop is light, buyers are quite active. They usually prefer to buy direct from growers rather than through an organization, for they do not wish to encourage co-operation any more than necessary. The result is that neither the locals nor the central can operate on a business basis. Costs of operation are relatively high, no advance plans can be made, and high efficiency cannot be obtained.

Take a local, for instance. How can a manager know when to hire labor for packing when he does not know whether fruit will be delivered to the association or not? How can either a local or exchange salesman take advantage of exceptional offers when he cannot be certain sufficient products will be turned over to him for sale.

Michigan growers have been having

a lot of trouble with marketing and it seems to me they will continue to have trouble until they get together and operate on a business basis. With the locals and packing houses that are established, they have the ground work laid for an excellent marketing organization, but there are certain things they will need to do before real marketing efficiency can be secured.

In the first place, growers should enter into contracts for a term of years with their locals. The locals in turn should enter into contract with the central. No one need to be scared of these contracts. Hundreds of thousands of growers all over the country have signed them, and most of them have profited thereby. In the last analysis, the contracts are simply agreements between the growers themselves by which they agree to stick together and see the proposition through. Since both the locals and centrals are grower owned, the proposition simply resolves itself into one of selecting good directors and executives. The organization will be as good as the growers and directors who control it.



Packing plant of Berrien County Fruit Growers' Association, Coloma, Mich.

With definite growers' contracts, the directors and officers can definitely plan the business in advance, which is essential in the success of any enterprise. They can establish grades and standards and trademarks that will build up a name for Michigan fruit and create a better demand for it. They can make the trade respect their organization. They can advertise Michigan fruit in a large way and increase the consumption of it. They can secure better and wider distribution of their products. They can hire competent men who will be able to market the products efficiently.

What the Michigan growers need is greater teamwork, the same as any successful business needs. Take the football game down at Urbana, for instance. Michigan might have been able to win if it had not been for the great teamwork of Illinois. When "Red" Grange started one of his runs, every Illinois man started for a Michigan man and in this way enough Michigan men were thrown or stopped that on five occasions "Red" was able to get through for touchdowns. If we looked upon Grange as a sales manager, his team mates as local associations, and the rooters as members, we should have a situation much like a co-operative venture. We need just such teamwork to make our co-operative associations a real success, and they will never accomplish great success without a lot of teamwork of that kind. A team of individual stars never gets very near the championship.

A sample of the Fennville pack

The Kellogg Strawberry Plant Farm

On the way home, I made a short visit to the Kellogg Strawberry Farms at Three Rivers. S. F. Beatty, the present manager, and his son have built up a wonderful plant. At the Three Rivers farm there are 120 acres under Skinner overhead irrigation, the water being obtained from the Portage river. The land is not devoted to strawberries all the time, but rotations are practiced in which corn and rye are grown.

The Beattys purchased the 300-acre Roland Morrill farm at Constantine after Mr. Morrill's death. There are 55 acres of plants on this farm. It was estimated that 11,000,000 plants were in this patch, and the growing season was not nearly finished. The Dunlap variety has proved the best seller. The Burrill also sells well. The demand seems to be growing for everbearing strawberry plants.

The Beattys have set out strawberry plants in the fall in recent years with excellent results.

In a special patch near headquarters, the famous Rockhill plants are being grown. This is the variety which gave the Beattys some trouble a year or so ago, but Mr. Beatty claims that the trouble was due to plants untrue to name which were sold to him as of the Rockhill variety. The true Rockhill plants are as good, according to Mr. Beatty, as advertisements stated, and Mr. Beatty still believes this variety will prove itself equal to claims made for it. Plants had just been removed from the stock plants and were used to set new patches. They hope to have sufficient plants to sell next year. There was a pretty fair crop of berries on the parent plants. The color was good, the plants seem to be strong growers, though not especially prolific plant bearers, and the quality of fruit was fine; in fact, the writer has never tasted better strawberries.

New Hampshire Society Meets

THE THIRTIETH annual meeting of the New Hampshire Horticultural Society was held at Rochester, N. H., November 5-7. The exhibit was not large, but the quality of the apples was exceedingly high, particularly that of the Baldwin apples. The color of these was undoubtedly superior to that of any Baldwins exhibited at any other show in this country.

W. H. Darrow, of the Connecticut Agricultural Experiment Station, presented the greetings of the Connecticut Pomological Society and gave an address on orcharding practice in Connecticut which was of much interest and value.

F. E. Cole, manager of the Nashoba Apple Packing Plant of Littleton, Mass., gave two addresses in regard to the work of his association. These growers are packing all of their apples in the layer pack in the Boston produce box, a distinctively eastern package. Every apple is wrapped, and a reputation for quality is being rapidly built up. In spite of the prejudice of the fruit trade against any new method of packing, these apples are already commanding the highest market prices on the Boston market and are distributed from Boston to various cities throughout New England. Mr. Cole spoke in detail in regard to his experience in adapting western layer pack methods to the eastern box and compared the merits of his pack with other methods of packing this box which are in vogue in the East. He also gave very pertinent advice relative to other problems in organizing and managing a co-operative packing plant such as the one of which he has charge.

Pruning the Peach Tree

(*Continued from page* 3)

bearing area and capacity. These trees at two years old (the third summer) bore from one peck to one bushel of peaches per tree.

Thus we can see that this long system produces a large tree very quickly, with large bearing capacity, and best of all, it comes into bearing very young, producing large crops of fruit of excellent quality, provided the trees

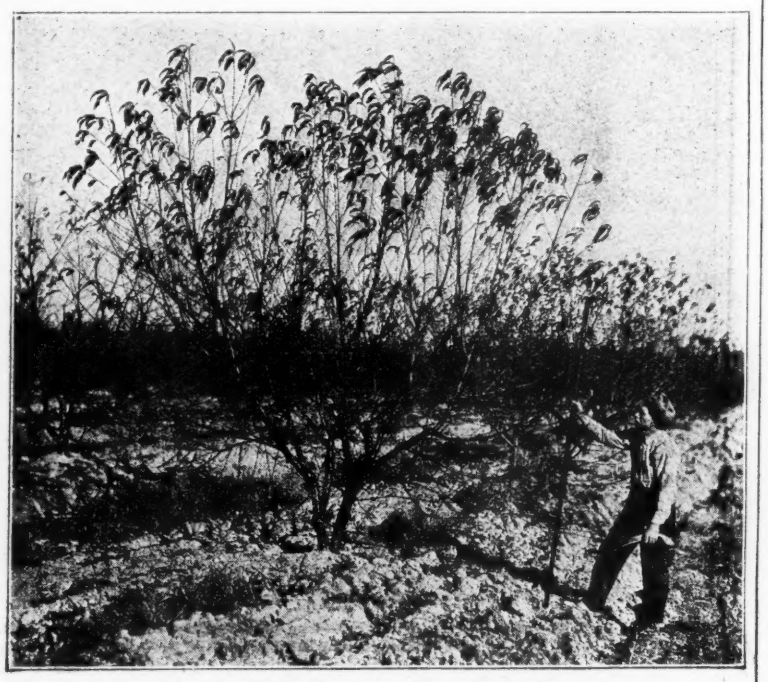


Figure 4—Tree at end of fourth season. Note spread and bearing area

are not allowed to overbear. All this is secured with much less expense for pruning than if pruned by the old system.

Development Under the Old System

To compare methods, let us start, under the old system, with a medium to heavy tree pruned to a switch and cut to 15 to 20 inches. This means enough pruning to aggravate the natural vegetative growth of the young tree. Supplement the pruning with good cultivation and some nitrate, and we have the result we see in Figure 5. The tree shows a growth very satisfactory in total amount but made up of quite a large number of nearly equal-sized limbs. All but three or four must be cut away. These three or four limbs are usually cut back one-third to one-half, but in this case (pictures taken from a neighbor's orchard) the limbs were cut back three-fourths or more. The result of the second season's growth with no summer pruning is well shown in Figure 6. The tree has a very large number of limbs again, all of nearly equal size and starting out near where the heavy cuts were made the previous winter. Most of these limbs must be again cut away, and if headed back one-third or one-half, from 50 to 75 per cent or more of the growth is cut off and thrown away.

This heavy pruning again induces a still larger number of succulent shoots near the cuts at the expense of the lower part of the tree. The top becomes more vegetative, and the lower part becomes under-vegetative. The situation gets worse and worse with each succeeding season, unless either the pruner or the tree gives up from sheer exhaustion. The expense for pruning and hauling brush becomes heavier each year as long as the system is adhered to strictly. I know that this is exactly what happens, for we have been through it in the growing of our older orchards.

Compare Figure 7 with Figure 4. The tree cut back is much smaller, more upright and less spreading than the long-pruned trees. The tree did not bear last year and will continue to be too vegetative to bear well as long as the cutting continues, producing lighter crops of poorer quality than the long-pruned trees.

Conclusions

From the foregoing facts, we must conclude that pruning is more or less of a dwarfing process and not one of invigoration, as generally supposed. Therefore, if we want our trees to grow large as quickly as possible, we must prune as little as we can and still keep the trees thin enough and in proper shape. If we want them to

Figure 5—Typical peach tree, pruned by the old method, after first season's growth. No summer pruning

Figure 6—Condition after two years' growth —heavily pruned at end of first season, no summer pruning

come into bearing young, we must get them into fruiting condition as quickly as possible.

This is accomplished by early summer pruning the first two or three seasons—repressing the strong growth not desired, directing the growth into the framework limbs that are desired, distributing the growth over a large surface, and into a large number of small twigs. This results in a large total growth of the tree, but the individual growth will be sufficiently non-vegetative to set buds even the second summer, sometimes maturing a profitable crop the third summer. The fourth summer the crop should be quite large.

On the other hand, under the old method of pruning, the tree usually makes plenty of fruit buds for a crop the third and fourth summers, but the growth is so succulent that the fruit usually drops off because the tree's energies are expended in making wood instead of bearing fruit.

In young trees, the stimulating effect is very marked in the tops near the cuts, while the dwarfing of the tree shows up in the lower limbs. In old trees the dwarfing effect on the tree shows up in the top, and the stimulating effect appears in the lower branches. Therefore, in pruning young trees, stimulate the tops as little as possible by pruning mostly in the summer, which encourages normal development of the lower and side limbs. In older trees, prune heavier in the tops to dwarf them somewhat and to stimulate and encourage growth lower down and to keep that growth alive. All this means that we should have our trees not less than 25 feet apart each way.

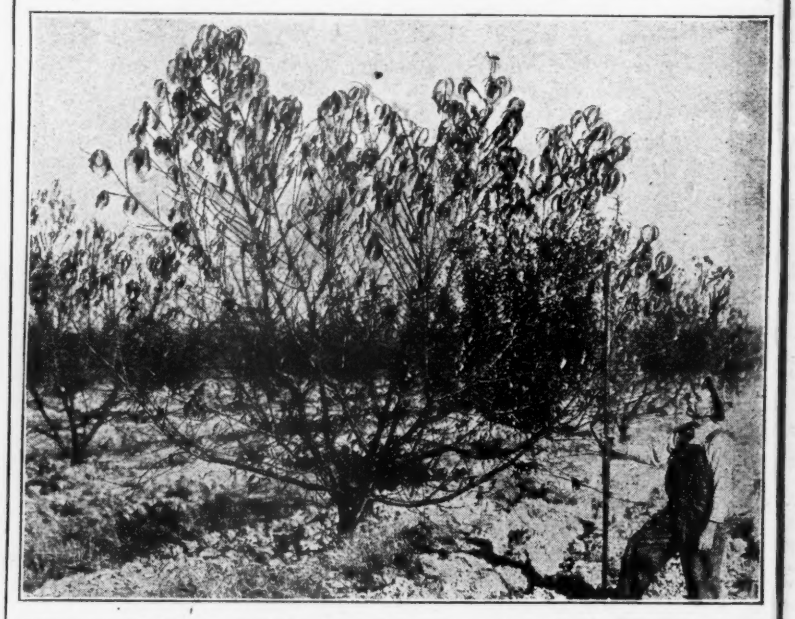


Figure 7—Peach tree at end of fourth season—long pruned first two seasons, cut back at end of second and third seasons

Heading Back Older Trees

In our older closely-planted orchards we cannot follow this long-pruning indefinitely without some heading back every three or four years. When necessary to cut back, do not go to extremes. Do not dehorn, but cut back moderately, say two to four or five feet. Cut to a good-sized limb extending outward rather than inward.

This heading should be followed by summer pruning in the form of pulling off the strong sprouts that appear near the cuts or elsewhere. Do it

(*Concluded on page* 30)

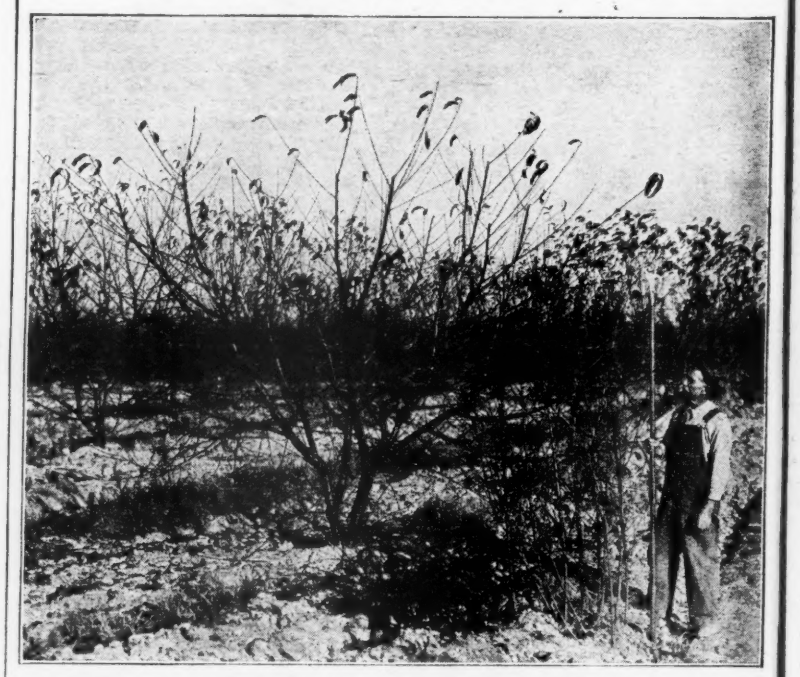


Figure 8—Same tree as in Figure 7 after pruning by old method. Note pile of brush resulting from removal of large one-year-old branches and from heading back

Young and Old Trees

When good-sized cuts are made in the tops, that is, in the main branches, there are two somewhat opposite effects operating—the stimulating of the growth near the cuts, and the dwarfing of the tree. These two principles of pruning seem to operate differently in young and in old trees.

How Carbonated Fruit Beverages Are Made

(*Continued from page 8*)

pressing the whole fruit without previous crushing, a minimum of tannic acid was obtained. In fact, some persons familiar with pomegranate juice declared there was a deficiency of astringency. The basket type press was found most satisfactory for this purpose. High pressure is necessary for efficient extraction.

Filtration and Clarification

Filtration may be accomplished without producing clarification. This is especially true of apple juice and white grape juices. Solid particles may be removed by filtration through closely woven cloth, felt jelly bag or wood pulp, cotton pulp or paper pulp filters under pressure, while colloidal particles may remain, giving a cloudy appearance to the juice.

By using a clarifying agent, such as infusorial earth or diatomaceous earth, an apparently clear and sparkling juice can be obtained, but after the juice stands several months, a precipitate forms, unless filtration is repeated several times.

By heating the juice the protein is coagulated. Then by the use of infusorial or diatomaceous earth a permanent clearness may be obtained. The use of these clarifying agents necessitates the use of a filter press, which consists of a series of plates, either of metal or wood, between which are placed pieces of canvas, on which the filter mass is formed. Each section consists of a piece of canvas and two plates, and acts as an independent filter, although all are fed from one general source.

Filtering media which have been very satisfactory are an especially treated "Filter-Cel" and a baked diatomaceous earth known as "Diatomite."

For the clarification of grape juice, it is necessary to allow the cream of tartar to precipitate out before filtration. If cold storage facilities are available, this may be accomplished in a few days. Otherwise, it might require several weeks.

After heating, berry, cherry and pomegranate juices may be filtered brilliantly clear without the use of a clarifying agent.

It is claimed by some that the cloud present in juice is an indication that it is pure fruit. If it is brilliantly clear, it is thought that too much of the real fruit element has been removed. This is especially true of orange juice. The more pulp of the orange that can be held in suspension in the juice the better it is. The popular idea of grape juice also seems to favor the cloudy type, like Welch's. It has been found that brilliantly clear juice can be produced from strawberries, blackberries, loganberries and pomegranates with no apparent loss of the real fruit constituents.

Syrups for Beverages

The simplest method of producing bottling syrups is by adding cane sugar to the clarified fruit juice. This is the method which we have used in making syrups from berries. The berry juices are of such low sugar content and high acid content that they require the addition of sugar to make a palatable drink.

Concentrates for Beverages

The most economical form in which fruit juices can be handled in the production of beverages is in the form of concentrates.

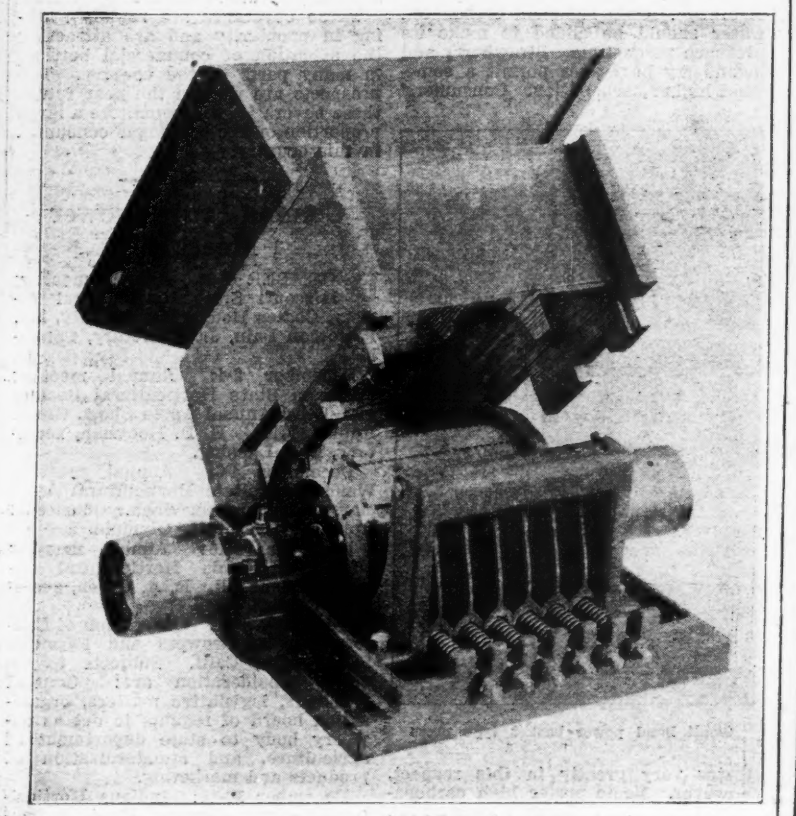
Concentration of fruit juices may be accomplished (1) by the open kettle method, which is not conducive to retention of fresh fruit flavor and color; (2) by concentration in vacuum which has proved satisfactory with orange, lemon and grape juices, which are now produced in commercial quantities by this method; and (3) by freezing.

Blackberries, cherries and pomegranates have been concentrated in vacuum successfully and give evidence of becoming successful commercial products.

Concentration by freezing is a process which has been developed by Gore and Monti but has never been used extensively for commercial production. Experimental work carried on in conjunction with our laboratory work has developed a freezing process which is economical and practical. The freezing process ranks first of all concentration processes for quality of product. The aroma, flavor and color of the original juice are preserved perfectly.

Syrups Made from Concentrates

These concentrates permit of various degrees of dilution, approximately as follows:



Crusher or grater attachment of orchard size type

Orange, 1 part concentrate to 5 parts simple syrup.
Lemon, 1 part concentrate to 25 parts simple syrup.
Cherry, 1 part concentrate to 8 parts simple syrup.
Pomegranate, 1 part concentrate to 5 parts simple syrup.
A simple syrup of 60 degrees Balling is used.

Blackberry has not a very distinctive flavor, so it is not desirable as a beverage by itself. It has a very deep permanent color.

Strawberry juice has a very strong flavor but a weak color. It has been found very satisfactory to blend the strawberry with blackberry, which produces a very attractive beverage of a deep red color, having a very distinctive strawberry flavor. This is labeled "Strawberry with Blackberry." From one and one-half to two ounces of this syrup is added to a seven-ounce bottle and filled with carbonated water.

Carbonation

Carbonation increases the acidity of the beverage. Since most fruit juices have sufficient acid to make them palatable, a low carbonation is usually necessary. This is especially true of orange. Only sufficient carbonated water should be added to make its presence perceptible. Strawberry and loganberry beverages permit a somewhat higher carbonation. Consumers'

Small hand power basket type press

tastes vary greatly in this respect, however. Some prefer high carbonation, some low and some none at all. The amount of carbonation then must be determined by the taste of the majority.

Pasteurization

All carbonated fruit beverages require pasteurization for preservation. Carbonic acid gas is a preservative, but it has not been found sufficiently effective, in the small quantities required, for making palatable carbonated fruit beverages.

It has been found that a temperature of 150 degrees Fahrenheit for 30 minutes is necessary for permanent preservation of seven-ounce bottles. Non-carbonated beverages in the same size bottles require from 165 degrees Fahrenheit to 175 degrees Fahrenheit for 30 minutes. The presence of carbonic acid gas lowers the death temperature of mold spores. Commercial pasteurizers are available at bottling equipment supply houses, with capacities varying according to the requirements.

On a small home scale, pasteurizing may be accomplished by using a wash boiler or tin wash tub. The sealed bottles are placed in the boiler, which is filled with cold water. The temperature of the water is raised gradually to 150 degrees Fahrenheit, which is maintained for 30 minutes. The heat is then turned off and cold water is allowed to flow slowly into the pasteurizer, and the hot water is drained at the same rate, thus maintaining the original volume of water in the pasteurizer. Extreme care must be exercised to prevent the stream of cold water from coming in contact with hot bottles, or there will be breakage. A good way to handle this matter is to allow the cold water to flow into a pan or other vessel submerged on top of the bottles. When the temperature of the bath has been reduced to between 110 and 120 degrees Fahrenheit, the cold water may be turned off and the pasteurizer allowed to drain. The cooling may be completed in air.

There is a tendency for these beverages to deteriorate with age. For best results the orange beverages should be consumed within two months after production, otherwise a stale taste develops which is objectionable to many. Lemon will keep considerably longer than orange without any apparent deterioration. The color of strawberry beverage has a tendency to fade, especially when exposed to bright sunlight. When combined with blackberry, this tendency is lessened, however. Loganberry has a more permanent color and flavor.

These beverages are rapidly growing in popularity and are attracting the attention of commercial bottlers in many parts of the country. The prospects are that in the near future these beverages will constitute a large proportion of the beverages consumed in this country.

Coming Fruit Grower Meetings

DECEMBER 2-3: Annual meeting Missouri State Horticultural Society, Coates House, Kansas City, Mo. Patterson Bain, Jr., secretary, Columbia.

December 2-4: Annual meeting Michigan State Horticultural Society and Third Annual Apple Show, Grand Rapids, Mich. H. D. Hootman, secretary, East Lansing.

December 4-6: Annual meeting Washington State Horticultural Association, Wenatchee, Wash. Charles L. Robinson, secretary, Olympia.

December 9-10: Annual meeting Northern Illinois Horticultural Society, Galena, Ill. R. A. Green, secretary, Ottawa.

December 9-11: Convention of California Fruit Growers and Farmers, Sacramento, Calif. Subjects to receive consideration are: General problems, legislative matters, organization board of regents to act as advisory body to state department of agriculture, and standardization of products and marketing.

December 10-11: Indiana Horticultural Society, Claypool Hotel, Indianapolis, Ind. Joint meeting of pomologists, vegetable growers and florists. H. H. Swaim, secretary, Lafayette.

December 11-12: Annual meeting Connecticut Pomological Society, Hartford, Conn. H. C. C. Miles, secretary, Milford.

December 16-19: Illinois State Horticultural Society, Urbana, Ill. Meeting and exhibits. H. W. Day, secretary, Springfield.

January 7-8, 1925: Annual meeting Massachusetts Fruit Growers' Association, Worcester, Mass. R. A. Van Meter, secretary, Amherst.

January 14-16, 1925: Annual meeting Wisconsin State Horticultural Society, Madison, Wis. F. Cranefield, secretary, Madison.

January 19-23, 1925: Horticultural Show, Missouri State Horticultural Society and Student Horticultural Club co-operating. College of Agriculture, Columbia, Mo. Patterson Bain, Jr., secretary, Columbia.

February 2-6, 1925: Farmers' Week, Ohio State University, Columbus, Ohio. Ohio State Apple Show to be held during Farmers' Week; also annual meeting of Ohio State Horticultural Society, February 2-4. F. H. Beach, secretary, Columbus.

As soon as you have read this issue of the American Fruit Grower Magazine, please pass it on to your neighbor.

Control of San Jose Scale on Peach Trees

LUBRICATING-OIL emulsions, whether made from the boiled or cold pumped formulas or purchased from manufacturers, have proven effective for the control of the San Jose scale on peach trees when used at a two per cent strength during the dormant season. The Bureau of Entomology of the United States Department of Agriculture has had two years' experience in the use of these emulsions on the same peach trees, and there has been excellent control of the scale and no discernible injury to the buds, twigs or collars. While it is desired to use the material on the same trees over a long period of time to observe results from its continued use before making final recommendations, the following directions are given for the benefit of growers who wish to use oil emulsions this year in place of the liquid lime-sulphur for scale control.

How To Prepare

Lubricating-oil emulsion is prepared from either one of the following formulas:

	Small quantity.	Large quantity.
I. The Boiled Formula:		
Red engine oil, or oil of simular grade	1 gal.	30 gals.
Water	½ gal.	15 gals.
Potash fish oil soap.	1 lb.	30 lbs.

When a small quantity is to be prepared, the ingredients are placed in a kettle and boiled for a few minutes until the brown scum, which forms on the top, has disappeared. Then the kettle should be removed from the fire and the contents pumped twice under at least 60 pounds pressure while still hot. The emulsion prepared in this manner should be used shortly after it is made.

To make the boiled emulsion on a large scale, the following equipment is necessary: Two 50-gallon barrels, one 300-gallon storage tank, one all metal triplex pump developing 250 pounds pressure, one four horsepower engine, one boiler, and necessary connections. This equipment would be of use only to growers with a large acreage or a group of growers with smaller acreages.

When made on a large scale and pumped four times under high pressure, the emulsion will hold up for several months. The method given for preparing large quantities of the emulsion is similar to that employed by large-scale manufacturers. Emulsions prepared in this manner will hold up during the entire spraying season as long as the temperature remains above 15 degrees Fahrenheit.

II. Cold-Pumped Formula:	
Red engine oil or oil of similar grade	30 gals.
Water	15 gals.
Calcium caseinate	4 lbs.

The following equipment is necessary for preparing the cold-pumped emulsion: Two 50-gallon barrels, one duplex or triplex pump, and one three or four horsepower engine (the ordinary power sprayer with suction attachment).

The ingredients are placed in a 50-gallon barrel and stirred, then the suction hose is placed in the barrel and the motor started. Allow the ingredients to be sucked through the pumps under pressure and out through the spray rods with disks removed into another 50-gallon barrel. Repeat the operation until all materials have passed through the pump three times. Lubricating-oil emulsion made from this formula will not hold up long and should be made daily as required. This kind of emulsion is especially easy to make on the farm.

How To Use

The stock emulsion made from either of the two formulas contains 66⅔ per cent of oil. Therefore, six gallons of the stock emulsion should be used to 194 gallons of water to get a two per cent emulsion, the strength recommended for scale control. Before using this emulsion, all sediment in the spray tank from the use of other sprays should be thoroughly cleaned out. After the tank is filled two-thirds full with water, the engine should be started and the six gallons of stock emulsion poured in. Then the tank should be filled to capacity with more water.

Lubricating-oil emulsions can be used any time after the trees become dormant. They should not be used while the tree is in foliage. These emulsions will not mix with lime-sulphur and growers should see that all spray tanks containing lime-sulphur residue are thoroughly cleaned out before starting the oil-emulsion spraying. If the emulsion breaks down from the use of hard water, as is encountered in some sections, add ¼-¼-50 Bordeaux mixture to the water before putting in the stock emulsion.

Combined Control of San Jose Scale and Peach Leaf-Curl

Peach leaf-curl, a disease which occurs in the spring and is manifested by swollen and distorted leaves and twigs, with sometimes quite serious damage to the trees, can be controlled by adding Bordeaux mixture, 4-4-50 strength, to the oil-emulsion spray. The main point to be remembered concerning the control of this disease is that the spray *must* be applied before the buds begin to swell or no control will be obtained.

Prepare a stock solution of copper sulphate (bluestone) by suspending 50 pounds of the crystals in a clean sack at the top of 50 gallons of water in a container (a clean wooden barrel with wooden hoops is preferable; if it is necessary to use a barrel that has contained lime-sulphur it should be very carefully cleaned). This will dissolve in 24 hours, or sooner if hot water is used. The stock solution of lime is prepared by slaking 50 pounds of high grade stone lime into a thick paste and then making it up to 50 gallons by adding water.

Measure out 16 gallons of the stock solution of lime (carrying 16 pounds of lime) and pour it through the strainer into a 200-gallon spray tank that is about two-thirds full of water. The stock solutions should be thoroughly stirred before they are measured out in the case of both the lime and the copper sulphate. Then slowly pour 16 gallons of the stock copper sulphate solution (carrying 16 pounds of copper sulphate) into the tank, mixing it with the diluted lime solution *with the agitator running.* Add the oil emulsion while the Bordeaux mixture is being agitated and then fill the tank to capacity.

The amount of material listed above will give stock solution sufficient for three tanks of Bordeaux mixture used at the 4-4-50 strength.

Receive Apples in Carton From Maine

THE AMERICAN FRUIT GROWER MAGAZINE extends its thanks to George N. Emmons, of West Paris, Me., for sending a box of apples that took first prize at the Oxford (Maine) County Fruit Show. The apples were packed in the compartment box described in our November issue in the article on "Rambles of a Horticulturist." The package was sent by parcel post, and the apples came through in splendid condition, except one that was perhaps lifted by a postal clerk. After examining the quality, we couldn't blame him for that.

B. & O. Promotes Apple Week

THE BALTIMORE and Ohio railroad rendered a service to apple growers when they promoted Apple Week. The October issue of the B. & O. magazine contained front and back covers and a feature story which were complimentary to Apple Week. In addition, the dining car service emphasized Apple Week and featured various apple dishes in menus during the week.

$11.50 Buys In

To Spra

The

B

N

Delivered East of the Mississippi River—

Drum $2.00 Extra (Returnable)

THE COMPLETE SCALE

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Enough Scalecide

pay As Many Trees Until hy Drip As One 50-Gallon Barrel of Lime-Sulfur— No Nicotine-No Spreader

You can't tell what a peach tastes like without eating it yourself. Neither can you appreciate the benefits of Scalecide without using it on your own orchard.

Kills San Jose Scale

The failure of lime-sulfur to control scale has been the subject of discussion at fruit growers' meetings for the last three years. Scale is on the increase in nearly every state, so you will want to be sure of controlling it in your orchard.

Is The Complete Dormant Spray

Scalecide controls scale, even when they crust and coat the tree. Used as a delayed dormant spray, it controls aphis too—without nicotine. Spring spraying with Scalecide also controls pear thrips, leaf miner, case bearer, leaf roller, bud moth, European red mite, fungus or blight cankers from which are spread fire blight, collar rot and root rot. And in addition, year after year use of Scalecide invigorates the trees.

Is Pleasant To Use

Scalecide will not even injure eyes—you can look straight at your work. You don't have to wear slickers and goggles, grease your hands and face, and blanket your horses. Both you and your help will appreciate the pleasure of using Scalecide in the place of lime-sulfur.

Reduces Sprayer Troubles

When you use Scalecide the life of your sprayer is prolonged, because it is actually running in oil. There is no corroding substance or grit to cut the valves and pump, or clog the nozzles.

Saves Half the Labor

Lime-sulfur dries where it hits. Scalecide crawls and spreads into the cracks and crevices of the bark and does a thorough job. Because it covers perfectly with a thin film, one tankful of dilute Scalecide will spray, until they drip, as many trees as two tankfuls of dilute lime-sulfur. In one of our own orchards, 11,000 gallons of dilute Scalecide sprayed the same trees as 25,000 gallons of dilute lime-sulfur the year previous.

Scalecide Is Guaranteed

We guarantee that, if you will divide an orchard, your worst or best, in two parts equal in general condition, and for three years spray one part with Scalecide according to our directions and the other part with lime-sulfur, giving the same summer treatments to both parts, the part sprayed with Scalecide will be better than the part sprayed with lime-sulfur—in the judgment of three disinterested fruit growers—or we will refund the money you have paid for the Scalecide. Why should you hesitate?

See Your Dealer Immediately

Be sure to get these benefits—save money and get better results. See or phone your dealer today. Arrange right now for your supply. Don't put it off longer.

A Size For Every Need

Scalecide Prices

Delivered East of the Mississippi

50-gal. bbls.	$38.00
15 gals. 11.50 / Drum 2.00 (returnable)	13.50
2—5-gal. cans	10.60
1—5-gal. can	6.25
1—1-gal. can	1.75
1—1-quart can	.75

If your dealer doesn't carry Scalecide show him this advertisement—or order direct from us. Send today for free booklet, "Economy of Scalecide."

B. G. PRATT CO. Department 11 50 Church Street NEW YORK, N. Y.

ECIDE

E DORMANT SPRAY B.G.PRATT CO.

ECIDE

Edited by Paul C. Stark

Pruning Young Orchards

I have about eight acres of apples now three years old. Will they need any pruning next spring and what type?—E. O. T., Pennsylvania.

TREES which have reached the age of three to five years probably require the least pruning of any age, provided they have been given the right start. This does not mean, of course, that none will be required, but such cutting as is done will be light and corrective in nature.

The pruning of an apple tree during the first two years of its life is very important. It is at this time that the shape of the tree will be determined, including such important items as height of head, number and distribution of scaffold branches, and removal of all bad crotches which may occur early in the life of the tree. The next two or three years then compose the so-called growing period of the tree, after which time fruit production begins. It is during this period of rapid growth that little or no pruning is given, not only because it is not usually necessary, but because it may delay fruiting if not properly done. Once the tree comes into heavy fruiting, however, pruning may be resumed with the purpose of thinning out the branches to open up the tree and also to keep up the vigor of new growth.

Pruning is handled at all times so as to promote bearing, but early in the life of the tree there are times when growth counts more than anything else. This should be combined with attention to proper training of the tree so as to produce a strong framework, free from the weaknesses of narrow crotches and badly located branches.

High Power Sprayers

Would a high power, large capacity sprayer be practical in a 50-acre apple orchard?—O. M. R., Virginia.

UNLESS you refer to a super-power spray outfit, a large capacity sprayer would undoubtedly be practical in a 50-acre orchard beginning at the time the trees reached bearing age and afterwards. The chief reason for this fact is the necessity for covering the whole orchard in the shortest possible space of time, particularly at the time of the spring spray applications, when flowers and fruits are rapidly enlarging and need covering at a critical time in their growth. Two moderate sized outfits might be better in this respect than one large one, except for the greater amount of labor required, thereby giving less economy. Plenty of pressure is a very important item—it means more efficiency both as to quality of work done and cost. Don't get a sprayer that is too small. The first cost is not important compared to the long years of service and efficiency.

Russeting on Fruit

What is the cause of russeting of apples? I have found most of it occurring on trees I sprayed during late summer for blotch.—O. S. B., Arkansas.

THE COMMONEST cause of russeting, particularly in southern fruit sections where bitter rot and blotch are present, is the use of Bordeaux mixture, which produces, when severe, a condition known as "Bordeaux Injury." This injury may be serious in moist weather, but as a general rule no more than slight russeting will occur under ordinary conditions of application.

In spraying with lime-sulphur, russeting can probably be diminished by spraying in early forenoon and in the cool of the late afternoon during very hot weather.

Early Grapes

What is the best early variety of grape? Is Concord still considered the most popular variety for commercial planting? Please name about six good varieties for home use.—O. T. K., Kentucky.

MOORE'S EARLY is considered by most growers to be the best of the early grapes. It is a black grape, similar to the Concord but ripening about two weeks earlier. The Concord, however, is still the most popular commercial grape in all the big grape sections of the East and Central West.

For home use the following varieties, in addition to those mentioned above, are all very good: Niagara, Delaware, Lucile, Worden, Brighton, Campbell's Early and Lutie.

Island Belle or Campbell's Early?

by W. A. French

THE ISLAND Belle Grape Growers' Union is determined to have the matter authoritatively settled as to whether or not the Island Belle and Campbell's Early are identical, as announced by Harry D. Locklin, horticulturist at the Western Washington Experiment Station. A letter has been received from F. E. Gladwin, of the New York Agricultural Station, who states that Campbell's Early bore its first fruit in 1892, that it was introduced through George S. Joslyn of Fredonia, N. Y., and that it is his impression that Mr. Joslyn began its propagation in 1900. In 1890 Adam Eckert, originator of the Island Belle, secured the vines from which the Island Belle was developed, from the Busch Nursery in Missouri. It thus seems very improbable that those original vines could have been Campbell's Early.

In a letter to Mr. Locklin of the Western Washington Experiment Station, the Island Belle Grape Growers' Union states that Mr. Eckert and his son, under the name of the Eckert Fruit Co., were engaged in the nursery business for a number of years at Detroit (now known as Grapeview) in Mason County, Wash. When they went into the grape-juice manufacturing business, they sold their nursery. Many Island Belle vines were propagated and sold, many of them to other nurserymen. Later, some of these Island Belles were sold as Campbell's Early in certain districts where there was a greater demand for the latter, and the Island Belle did not have the publicity that it now has. It thus seems possible that the vines compared by the Western Washington Experiment Station, and which led Mr. Locklin to decide that the Island Belle and Campbell's Early were identical, were in reality all Island Belles from the Eckert vineyard.

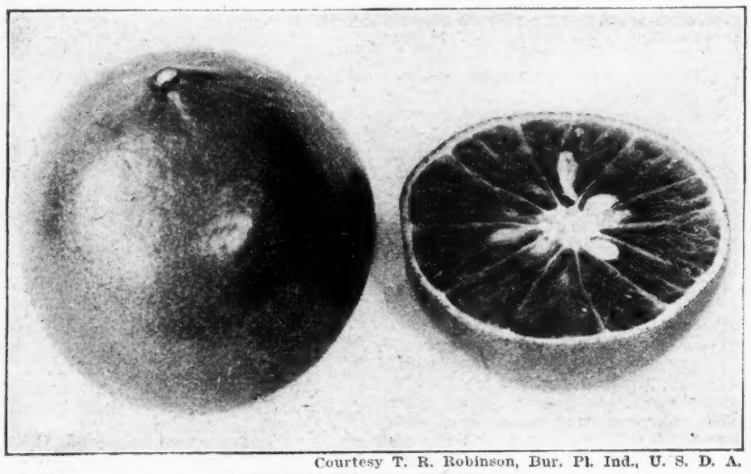
The Experiment Station has now agreed to make a field trial of these varieties, securing the true Island Belle from this district and the true Campbell's Early from the state of New York. In this way it should not be difficult to settle the matter.

Citrus Varieties Resistant to Canker

(*Continued from page 7*)

plants are very susceptible to canker, and in a block of nursery stock the disease is very hard to detect. Further, in certain districts where budded grove trees have been killed in past years, the trifoliate orange stock has grown up into a regular thicket. However, until a resistant stock is found which will be as winter-hardy, as easily grown, and which will yield the same good results as a stock as the trifoliate orange does, the trifoliate orange will stay with us.

In the search among the citrus fruits for promising canker resistant types, activity will have to be confined to a few groups which show some promise of being resistant to canker, as the citrus fruits taken as a whole are susceptible to canker.



Courtesy T. R. Robinson, Bur. Pl. Ind., U. S. D. A.
A specimen of the Sampson Tangelo

Grapefruit Susceptible

All the grapefruits now grown in this country are extremely susceptible. However, one or two pummelos (near relatives to grapefruit), originating from Siam, show considerable resistance to canker.

Of the sweet oranges, no variety or species stands out as resistant, although they are not as susceptible as grapefruit.

All mandarin oranges show resistance to canker. The Cleopatra tangerine, which appears to be an excellent stock for some types of Citrus, might, after further trials, be found suitable to replace the trifoliate orange as a stock. The writer believes that under field conditions suitable for Satsuma or tangerine culture, and with no interplanting of susceptible varieties, these oranges can be grown with little or no loss from canker, even when it is present.

The Calamondin and Kansu oranges, the one native of the Philippine Islands and the other of the Kansu region in North China, both show some resistance to canker.

Hybrids Prove Susceptible

All of the many hybrids, of which the trifoliate orange is one parent, are susceptible. When the trifoliate orange is crossed with any of the more resistant Citrus species, the resistance of the progeny is lessened. The hybrid resulting from a cross between the trifoliate and sweet oranges is known as a Citrange. A number of these Citranges have been used by Mr. Swingle as one parent for crossing with kumquats and mandarin oranges.

One of these hybrids, known as the Citrangequat (Willits citrange crossed with kumquat), has consistently proved resistant, in fact, as much so as its second parent. It is the most promising canker resistant hybrid so far found.

One disadvantage in the use of the citrangequat as a stock has been the small number of seeds produced. However, Mr. Swingle and his assistants recently have developed a method of propagating the citrangequat by the use of root cuttings, so that a stock of this hybrid can now be rapidly built up. If it is found that the citrangequat will make as desirable a stock as the trifoliate orange, it can replace the trifoliate orange, as at the present time this orange is an obstacle to the final eradication of canker in the Gulf Coast states.

The citrange-mandarin crosses are also resistant enough to warrant further trials both as stocks and grove trees.

Courtesy T. R. Robinson, Bur. Pl. Ind., U. S. D. A.
The Eustis Limequat

The Tangelo

The tangelo (tangerine crossed with grapefruit) and Satsumelo (Satsuma crossed with grapefruit) are as resistant as Satsuma. Several named hybrids of the tangelos are now being grown in a commercial way in Florida and have attracted considerable attention.

(*Concluded on page 25*)

IN THE development of co-operative marketing, well organized and well operated local associations are of the greatest importance. On my recent trip to Michigan, I visited the Fennville Fruit Exchange at Fennville. This organization illustrates in a forcible manner the principles which are essential in the development of strong local associations.

The exchange has been built up largely by J. A. Barron, with the help of able directors and associates. Mr. Barron is field service manager for the Michigan Fruit Growers, Inc., during the present season, but he expects to return to the Fennville organization as manager next spring. During the present season, E. F. Payne is manager; he has been associated with Mr. Barron for several years.

The exchange is nine years old. It owns all the buildings on two sides of a city block, including an office building, packing plant and storage, supply warehouse, cooperage, eating house and dormitory. The properties should be worth at least $50,000. The exchange handles about 325 cars in a normal season. It is organized on a stock basis and has about 60 members. There are one-year contracts, but, as a matter of fact, these would not be needed, for the growers bring their products to the association without difficulty, having complete confidence that the fruit will be well handled. The way the members are supporting the organization is certainly a sharp contrast to the way other co-operatives are faring.

Previous to this season the exchange sold its own products. Practically all fruit was sold to dealers without going through brokers' hands. The records show that less than two per cent of the fruit has been sold through brokers. In 1923, only seven out of 315 cars were sold through brokers. This item means a saving of $25 to $50 per car and helps greatly to lower operating expenses.

The organization purchases large quantities of supplies. In 1923, the purchases amounted to $90,000.

The packing house is one of the most complete and best arranged I have seen in the whole eastern United States. The sizing machines are of a commercial type, made over to meet special desires. There are roller carriers running from the unloading platforms to the sizing machines. As the crates are emptied into the sizers, they are lifted to a belt conveyor overhead and are promptly taken to the crate room, where they are repaired, if necessary, and stacked in piles to await return to the growers. The facing tables at the farther end of the sizers have movable belts through their centers so that the packages can be moved easily.

There is an immense storage room adjoining the packing house in which the fruit can accumulate for loading on the cars. There are roller carriers for taking the fruit into or through this room. There is also a large basement under this room, which is used for cool storage. Roller carriers convey the barrels down into and out of this storage. The way carriers are made to do everything made me think that everybody must be awfully lazy in the Fennville plant, for really, they never lift a package of fruit, but, of course, the carriers are a real factor in saving time and expense.

But the packing house and the equipment, while extremely interesting, are not the best features of the Fennville Fruit Exchange. The best feature of all, in my opinion, is the splendid business methods which are used. When Mr. Barron began work for the organization, he went to the bank for a loan. As was customary, the banker suggested the time-worn and awful practice of having the directors endorse the company's note. Mr. Barron told the banker he did not believe directors should be asked to assume personal responsibility, and he asked the banker to determine the amount he would loan the association as such. Mr. Barron has kept his loans within the amount the banks would loan the association, and no director has ever been asked to assume personal liability. This is a remarkable accomplishment, and Mr. Barron is to be congratulated for his adherence to this sound principle. Few co-operatives can claim such a record, though it is a record all of them should be able to claim. It is a crime for any director to assume personal liability. A co-operative should be well enough financed so that personal liability will be unnecessary.

The financial statement of January 31, 1924, showed a reserve for depreciation of $5206.30 and a surplus of $9131.47. In the nine years of operation, dividends of five per cent were paid on the capital stock two years and seven per cent has been paid for seven years.

The bookkeeping system showed the same clear-cut business policy. Detailed records are on file showing the business, both with members and buyers, since the organization was established. When a grower delivers a load of fruit, he receives a card showing how many crates of each variety were delivered. After the fruit is graded, another card is mailed him which shows the number of packages of each variety and grade obtained from the fruit. Credit is given on the books for all deliveries.

The pooling methods were particularly interesting. Separate pools are made for each variety and grade for the season. The books, which are always open to members, show the name of each buyer, the quantity purchased, the number of packages of each grade and variety in each pool, the names of the growers contributing to each pool and the quantities contributed by each. The pools usually show a slight excess of sales over deliveries, due to over-filled baskets delivered by the growers. For instance, in 1923 the No. 1 Duchess pool packed out 5158 bushel baskets, while only 5123 bushels had been delivered by the growers. The over-run is later credited to the growers on the basis of the amount of sales. Temporarily, the amounts are placed in a fruit fund.

The exchange does not have any special pooling sheets printed. Instead, headings are simply written above the columns of unprinted sheets. This method has proved more satisfactory and less wasteful than large expensive forms printed in advance.

Of particular interest are the methods used to keep growers informed. In addition to the cards mentioned, each grower receives at intervals statements showing his entire account with the exchange. The shipping season is about three months long. In 1923, six such accountings were made to each grower. Thus, the reports were issued at intervals of about two weeks. In addition, a final accounting is made at the close of the season. Growers can and do verify these reports from data given on the cards. The value of such accountings to growers need not be emphasized.

They make a grower feel a real part of the enterprise, and they establish in him a confidence which is a great asset both to him and to the association.

I had inspected the Fennville accounting system before, but had never had the detailed working of it explained so well as on this visit. I said to Mr. Barron, "You have a wonderful accounting system, and I should like to tell our readers about it, but I am afraid if I say the things I should like to say, you will be besieged with letters asking for information." He replied immediately, "That's all right. Say anything you want to. If we receive letters, we shall be glad to answer them and give others all the help we can, because after our experience, we appreciate the advantages of a good accounting system." That remark was really the finest feature of the visit, and it showed better than anything could the real co-operative spirit used in building up the Fennville Fruit Exchange. If all of our co-operatives were conducted with such a spirit, we should not have so many disappointments.

THE DOOR County (Wisconsin) Fruit Growers' Union has had a most successful season. The cherry crop broke all previous records. A total of 14,380,984 pounds were delivered by growers. The Fruit Growers' Union handled 638,538 cases, of which 299,726 were Richmonds and 338,812 were Montmorencys.

The canning factory operated for 32 days and put up 1,848,444 small cans of cherries and 212,969 large cans.

There were 122 cars of fresh fruit shipped to the markets, including 22 cars sent by express.

The output this year was 400,361 cases more than in 1923, and 425,517 cases above the record crop of 1921.

The immense crop was handled in fine shape, both in the field and in the factory. The crews worked at top speed throughout the season and the factory ran without interruption. H. W. Ullsperger is general manager, and Charles Augustine is superintendent of the factory.

THE CALIFORNIA Walnut Growers' Association handled nearly 40,000,000 pounds of unshelled walnuts the past season, this being nearly four times the quantity shipped in 1912, and the purchasing power of walnuts is 16 per cent greater than in 1912, the year in which the association was formed.

THE FLORIDA Citrus Exchange is this year using Federal inspection for all of its products. The inspection will be paid for jointly by the Florida railroads and the fruit growers' organization. It will be furnished by the United States Bureau of Agricultural Economics.

THE CALIFORNIA Pear Growers' Association has obtained higher prices than usual for Bartlett pears of its members. The indications are that prices paid growers will range around $85 per ton as compared with $51 in 1923 and $46 in 1922. The improved prices this season are believed to be largely due to prompt shipment. The season began earlier than usual and there was no peak in the market. Excellent distribution was obtained, many cars going to the smaller markets. Credit is also given to more uniform packing, and advertising is also considered a factor in the higher prices obtained.

THE EXECUTIVE committee of the Federated Fruit and Vegetable Growers met in New York in late October. Satisfactory progress was reported in the marketing of M. O. D. oranges, Cataract apples and pears, Washington peaches and Utah apples. The difficulties in marketing Georgia peaches were held to be due to insistence of growers on consigning fruit to the larger markets. A committee was appointed to make recommendations regarding the proposed legislation before Congress.

The remainder of the report, which was rather lengthy, was devoted to vegetables, which now constitute a large proportion of the shipments.

HUNDREDS of thousands of dollars will be saved for Florida citrus growers as a result of lower rates secured through the establishment of boat line service to Atlantic seaboard cities, according to L. C. Edwards, president of the Florida Citrus Exchange.

The boat line rates from all Florida ports to New York City will be 35 cents per box, whereas the railroad rate to New York City is $1.65 per box from Tampa and $1.26 per box from Fort Myers. Thus, from 75 to 90 cents will be saved per box.

It is planned not only to serve Atlantic cities with their needs through the boat line service, but to transport fruit from these ports to inland cities by rail as well. Members of the exchange, it is predicted, will secure transportation at one-third the rate available to other growers.

Three boats have been charted, all of which have modern refrigerator equipment. Each will make two sailings per month. Shipments will start as soon as sufficient fruit is available.

FRUITS and vegetables to the value of $221,000,000 were handled during the 1922-23 season by co-operative associations reporting to the United States Department of Agriculture. As reports have not yet been received from all associations, the value of such products handled co-operatively is much greater than the figures given above. It is quite likely that the total value of fruits and vegetables handled through farmers' business organizations was in excess of $250,000,000.

Of the $221,000,000 reported, $182,000,000 represented the sales of fruits, $29,000,000 the sales of vegetables, and $9,500,000 mixed fruits and vegetables. The estimated number of cars of fruit handled was 107,787; the number of cars of vegetables, 59,944; and the number of cars of mixed fruits and vegetables, 9475. The figures indicating car lots and money value are as follows:

	Cars.	Value.
Fruits	107,787	$182,120,011
Vegetables	59,944	29,503,363
Mixed	9,475	9,565,603
Total	177,206	$221,188,977

The fruits handled in the largest quantities by the co-operatives, in the order of their importance, were as follows:

Fruits.	Cars of Fruit Handled Number.	Value.
Citrus	43,620	$69,202,327
Apples	16,099	13,794,341
Grapes (and Raisins)	15,889	43,510,669
Peaches	6,025	9,346,380
Strawberries	5,987	6,169,964
Pears	2,829	2,421,286
Plums and Prunes	3,195	12,453,720
Cranberries	1,685	3,906,510
Apricots	391	3,083,932
Raspberries	383	672,346
Loganberries	353	312,327
Blackberries	313	268,851
Cherries	199	499,354
Figs	190	1,130,000
Currants	121	93,918
Olives and Olive Oil	111	579,260
All commodities	107,787	$182,000,000

FOUR American co-operatives now have, or soon will have, films showing their activities.

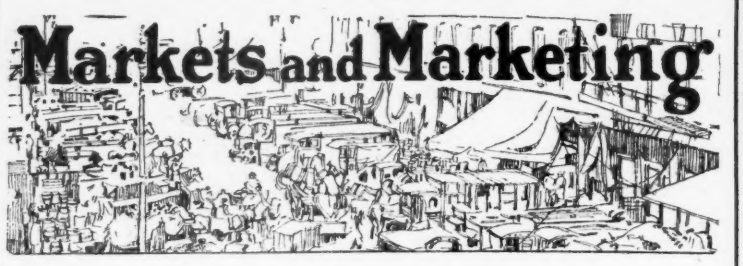
The Texas Farm Bureau Cotton Association has two films showing the steps involved in the marriage of King Cotton and Princess Prosperity.

The Egyptian Seed Growers' Association of southeastern Illinois is having a film prepared showing how red-top seed is handled and sold under a general pooling plan.

The Minnesota Poultry and Egg Exchange has a film entitled "Unscrambling Eggs." It shows the entire marketing program of the association. The operations of the local association at Owatonna are used as a background.

The Arkansas Cotton Growers' Association is using a film in its extension work which describes its methods of operation.

Markets and Marketing



ONE OF the serious problems in marketing fruit is that of increasing consumption. Fruits are among the most healthful food products in existence. They contain high percentages of minerals. They are rich in vitamines. They are generally helpful in maintaining good health and in combating disease. Most people know these things, and it would seem that they would be eating an abundance of fruit. It is a fact, however, that the average American is consuming small quantities.

If we take into account the average fruit production for the five years from 1918 to 1922, inclusive, we find that there were produced for each person an average of 1.49 bushels of apples, 0.4 bushel of peaches, 0.13 bushel of pears, 38.5 pounds of grapes, 1.85 quarts of strawberries, 1/5 box of oranges, 1/27 box of lemons, and 1/20 box of grapefruit. It should be emphasized that these figures represent the total average fruit production in all forms per capita.

These figures in themselves show a surprisingly small consumption per capita, but they tell only part of the story. We must bear in mind that large quantities of fruit are exported. For instance, over 12,000,000 bushels of apples, or about one-tenth bushel per capita, were exported in the year ending June 30, 1924. We must consider also that large quantities of fruit rot on the farms, in transit, and in the hands of dealers, retailers and consumers. As an example, we might cite this year's Georgia peach crop. A total of 22,000 cars of peaches were produced, while only 13,500 cars were shipped and a considerable quantity of this fruit rotted in transit or in the markets. Such conditions occur almost every year in one place or another. It is doubtful if over 75 per cent of the fruit produced is actually consumed on the average.

Taking all of the factors into account, it is clear that the consumption per person is quite small. It has been conservatively estimated that the average person consumes only one-fifth apple a day. It takes him five days to eat an apple. The consumption of pears, peaches and citrus fruits is less than this. The average person consumes less than one-tenth per pound of grapes a day in all forms. Only two quarts of strawberries are produced for each person for the entire year, and the actual consumption is much less.

Why do such conditions exist? There are many reasons. Some of the more important ones are the high costs of distribution, which cause high prices to be charged by retailers; the lack of proper grading and packing of many products; the fact that few homes are equipped for keeping fruit so that same can be purchased in larger quantities at lower prices; the fact that other food products have been advertised and promoted at the expense of fruit consumption; and that, with the exception of certain groups, fruit growers have never done anything to promote and encourage greater consumption of fruit.

That abundant opportunity exists for increasing the consumption of fruit has been proved by the citrus and raisin growers of California. The citrus growers doubled the per capita consumption of California citrus fruits in 13 years, notwithstanding the fact that increased consumption of Florida fruit was being brought about at the same time. The raisin growers doubled the per capita consumption of raisins in 10 years.

The situation is particularly interesting with reference to apples. While growers of certain other fruits have increased the consumption of other products, apple consumption seems to have decreased. The production per capita in 1890 was 2.17 bushels per person, while in 1920 it was only 1.79 bushels per person. While the production in census years is not a reliable guide, the figures in general indicate that the production of apples has probably failed to keep pace with the increase in population.

Everywhere the fruit growers seem to be worrying about over-production. Under present methods of marketing, there may be justification for this attitude, but there is little doubt but that with proper organization American fruit growers can adopt business methods that will greatly increase fruit consumption and thus take care of all of the production of the immediate future and for some years to come.

THE STATE of Washington last year shipped 37,664 cars of apples, or slightly over 27 per cent of the total carlot apple movement of the United States. This year the crop is considerably reduced due to late spring frosts, shortage of irrigation water and codling moth infestation. In the Yakima Valley alone, the 15,000 car crop of last year is about cut in half. Recent estimates have placed the Washington apple crop at 21,000 cars this year, against 37,664 cars last year. It should be remembered that last year's crop was an exceptionally large one. The five-year average production for Washington for the years 1918 to 1922 inclusive was only about 75 per cent of the production during 1923.

A RECENT report of the United States Bureau of Agricultural Economics states that probably 50 per cent fewer New York apples will be in storage on December 1 than last year. On October 1, the annual crop was estimated at 200,000 barrels less than last year. The advancing season may still further decrease the yield. The yields of Duchess and Wealthy have met expectations. Twenty Ounce fell short. Greenings are under-size, due to faulty pollination, and the crop is short; large sizes are scarce. Wealthy, Greenings, McIntosh and Hubbardston gave the best results. Baldwins and Spies produced a light crop and the yields of Russets and Ben Davis were below those of last year.

Fortunately, there were few windfalls this fall. As a result, canners and evaporators were somewhat disappointed. In consequence, the demand is stronger for the lower grades. Cider apples have been selling well at 50 to 60 cents per 100 pounds.

The report is quite optimistic as to market conditions for New York apples. The only possible obstacles to favorable marketing during the winter are the exceptionally large citrus crop and the possibility that retailers will raise the price of apples to points that will curtail consumption.

The conditions in New York, together with the reduced crop of boxed apples, have brought about an optimistic attitude on the part of growers, co-operatives and dealers who purchased fruit sometime ago. Around November 1, A 2½ Baldwins were selling in carlots at $5.25 to $5.50 per barrel f. o. b. Many shippers were holding out for higher prices. Last

year at the same time, similar stock sold for $3.75 to $4 per barrel.

Federal-state shipping point inspection will be used throughout the state this year. An advertising campaign is also being conducted. These should increase the demand for New York apples.

SALES of western New York apples from September 1923 to March 1924 were made in 29 states and the District of Columbia and Canada. At least 700 towns received one or more cars. During that period, the state of New York used 4903 cars, New Jersey 1469 cars, Pennsylvania 1184 cars, Ohio 1184 cars, Massachusetts 435 cars, Connecticut 412 cars and Illinois 322 cars. During 1923, New York shipped 15 per cent of the total carlot movement of apples in the United States, the total shipments from New York amounting to 20,252 cars.

THE RAILROADS deserve credit for keeping plenty of cars available this season despite the fact that car loadings have been the greatest in history. There have been sufficient cars available for all purposes throughout the season, though the number of surplus cars has been decreased somewhat during the past few weeks. Practically no car shortage has been reported anywhere during the season. A recent report stated that a surplus of 3291 refrigerator cars were on hand.

ROADSIDE marketing offers a real opportunity to growers located on good roads in the more populous sections of the country. However, a great many growers are not taking full advantage of these opportunities because they are not operating their stands most efficiently.

In order to assist growers in this connection, the extension department of the Connecticut Agricultural College has prepared a set of 60 lantern slides which are to be used in lectures. These slides show views of successful stands, as well as of others which have been unsuccessful. The object of the slides and lectures is to show growers how to arrange their stands attractively, how to display their products tastefully, and how to conduct the markets profitably.

TWENTY-ONE men were engaged during October in Virginia for inspection of apples under the law adopted last year. These men have been located in the important producing sections. Daily visits were made by each to the packing crews that were members of inspection rings. Packed barrels were opened from each day's pack, and the lots meeting requirements were stamped "Inspected as packed, 1924, State of Virginia, Division of Markets." If on any day the pack of a certain grower failed to meet requirements, the stamp was withdrawn and markings were removed from all mismarked barrels.

The Division of Markets is using a No. 1 stamp on all the barrels labeled by growers as fancy, extra fancy, etc., but which meet only the requirements of the United States No. 1 grade. A No. 2 stamp was also carried by the inspectors, but most of the No. 2 stock was shipped out in barrels unmarked as to grade but carrying the name of the variety and the grower.

THERE is a good demand for American apples in western Sweden, according to United States Consul W. H. Sholes. Importations to the port of Goteborg have increased about fivefold since pre-war days. American fruit is preferred to that from Czecho Slovakia because of the better grading and packing. Shipment is now being made direct instead of through England, as formerly.

Red apples are preferred and the Ben Davis and York Imperial are in favor. Sweden is too far north for successful fruit production. The apple crop is under normal this year and the late season has resulted in poorly colored and improperly matured fruit.

Practically no American oranges are imported into Sweden because of the high prices quoted on them.

SHIPPING point inspection has had its first trial in Maryland and has been very popular among the limited number of fruit growers to whom it has been available. The service was made possible by the establishment of the State Department of Markets. This department, established by the State Board of Agriculture and administered through the Extension Service of the University of Maryland, College Park, has co-operated with the Federal Bureau of Agricultural Economics in maintaining shipping point inspection at Hancock, Easton and New Windsor. More than 200 cars of peaches and apples have been inspected at these three points, and the total number is expected to exceed 500 before the close of the season.

The State Department of Markets is under the direction of F. B. Bomberger, assistant director of extension. S. B. Shaw, formerly specialist in horticulture for the University of Maryland Extension Service, is supervising the work for the state as chief inspector and specialist in marketing.

RESULTS of a survey of the roadside marketing business in New Jersey are given in Circular No. 77, "Farmers' Roadside Markets," just published by the New Jersey State Bureau of Markets, Trenton. New Jersey is unusually well adapted to roadside marketing because of its peculiar type of farm crops and its location along the great interstate highways of motor travel. Many markets of this type have sprung into existence along every country road during the last few years, some to meet with great success. Some of the reasons for their success were sought by Kenneth Hankinson, organization specialist with the State Bureau of Markets, and are listed in the new circular for the benefit of truck, fruit and vegetable growers of the state.

EXPORTS of apples have been heavy throughout the season, according to the International Apple Shippers' Association and the Kimball Export Company. In spite of the reduced crop this season, the export shipments have been heavier than last year. On November 1, 1924, 1,131,818 barrels and 1,711,159 boxes had been shipped as compared with 1,095,070 barrels and 1,379,787 boxes exported to November 1, 1923.

It is predicted that a decline in exports of apples will take place in the near future.

The marked increases in exports thus far are probably due to the decreased crop this year in the British Isles, where there is only about two-thirds the production of last year. Furthermore, the Canadian crop, with the exception of that in Quebec and New Brunswick, is at least 25 per cent below the production of last year. American apples are being exported to Great Britain, Belgium, Austria, Germany and the Scandinavian countries.

THE MALAGA (Spain) lemon crop promises to be excellent, according to Vice-Consul H. L. Smith. The crop in 1923 amounted to 130,000 boxes of 110 pounds net each. About 80 per cent of the crop is normally exported. The British Isles usually take about 50 to 60 per cent. The bulk of the crop is consigned to dealers in the receiving markets.

Sweet orange production will be under that of last year. It is estimated that about 40,000 boxes will be exported. The principal market is Great Britain.

IT IS estimated that 25,000 tons of prunes will be shipped from the United States to Germany during the coming season. If credit facilities improve, the importations may be still larger. The above figures, however, are not equal to the importations of last year.

Before buying an Orchard or Farm read the Classified Advertisements in the American Fruit Grower Magazine.

Citrus Varieties Resistant to Canker

(*Continued from page* 21)

Likewise the limequat (Mexican lime crossed with kumquat) is fairly resistant, as well as winter-hardy. The fruit is being grown in a small way, and has a place in the citrus industry of this country as a source of limeade.

Other hybrids which will not be mentioned here show considerable promise and warrant further trial, not only from the standpoint of canker resistance, but as plants suitable for stock and for their commercial value in orchards.

Thus, while much of the information collected regarding the canker resistance of a large number of citrus plants will never be used in the United States, owing to the success of the eradication campaign, it will be of value in those countries where citrus canker will always be present. The cost and labors involved in this study will be more than repaid by the introduction into the citrus industry of new varieties and hybrids which have commercial value as stocks or grove trees.

A. P. S. and New Jersey Society Hold Annual Meeting

THE ANNUAL conventions of the American Pomological Society and the New Jersey State Horticultural Society, held jointly at Atlantic City, November 11-14, proved entirely successful from every standpoint.

One of the most important features was the conference on marketing and distribution. Practically every phase of marketing was covered. Addresses were given by such men as Bert Johnson of Arkansas; E. N. Loomis of New York City; C. A. Bingham of Ohio; H. D. Simpson of Indiana; F. J. Robb of the United States Department of Agriculture; M. B. Goff of Wisconsin; W. S. Brown of Oregon; C. E. Bassett of Michigan; A. R. Rule of New York City; S. W. Fletcher of Pennsylvania; E. A. Hackett of Massachusetts; Alexis L. Clark of New Jersey; Paul Mehl of Connecticut; Wm. Hotaling of New York; and Gilbert Watts of Pennsylvania.

The by-product question was discussed in addresses by H. E. Eddy of Pennsylvania, W. R. Cole of Massachusetts, and J. W. Sale of the United States Department of Agriculture.

The variety question, which has always occupied a prominent place in the work of the American Pomological Society, was ably discussed by A. J. Farley of New Jersey, C. P. Close of the United States Department of Agriculture, C. J. Folger of New York, F. C. Sears of Massachusetts, and M. A. Blake of New Jersey.

An interesting discussion occurred with reference to the place of the American Pomological Society in the national organization of horticultural interests. Talks were given by Paul Stark, S. W. Fletcher, F. C. Sears, F. Cranefield, A. J. Farley, Thomas E. Cross, and others. Of particular interest were the suggestions made by S. W. Fletcher. After pointing out that many state horticultural societies have taken over much of the work formerly done by the A. P. S., he suggested the advisability of maintaining the A. P. S. by state society memberships rather than by individual memberships. This was a valuable and practicable suggestion.

A valuable session was held on fruit insects and diseases, at which addresses were given by Doctors W. H. Martin, A. Petterson, L. A. Stearns, T. J. Headlee, and Prof. A. J. Farley, all of New Jersey.

An evening session was given over to the presidential addresses of Paul C. Stark of the A. P. S., and C. F. Repp of the New Jersey State Horticultural Society, followed by valuable addresses on various economic phases of production by C. D. Barton and Mary T. Haines of New Jersey and M. L. Wilson of the United States Bureau of Agricultural Economics.

The pollination question was ably handled in papers by Dr. E. C. Auchter of Maryland and Prof. J. H. Gourley of Ohio.

Resolutions were passed (1) endorsing the Eat-More-Fruit campaign; (2) asking that the Department of Agriculture call a nation-wide conference to consider ways and means to unify grading; and (3) that the United States Bureau of Crop Estimates be asked to secure reports from associations and competent authorities as well as from individuals, to the end that more accurate crop estimates might be made.

There was a large and varied exhibit of fruits, vegetables, horticultural supplies and equipment of various kinds. Of particular interest was the student judging contest, at which teams from five agricultural colleges competed.

The former officers of the A. P. S. were re-elected as follows: President, Paul C. Stark, Louisiana, Mo.; vice-president, J. C. Blair, Urbana, Ill.; second vice-president, W. T. Macoun, Ottawa, Canada; and secretary-treasurer, H. C. C. Miles, Milford, Conn.

The new executive committee is as follows: C. A. Bingham, Cleveland, O.; W. S. Brown, Corvallis, Ore.; V. R. Gardner, East Lansing, Mich.; F. I. Odell, Cannelton, Ind.; H. B. Tukey, Geneva, N. Y.; F. Cranefield, Madison, Wis.; W. L. Howard, Davis, Calif.; A. J. Farley, New Brunswick, N. J.; W. S. Perrine, Centralia, Ill.; R. A. Van Meter, Amherst, Mass.; and C. D. Matthews, West Raleigh, N. C.

Iowa State Horticultural Society Meets

THE IOWA State Horticultural Society held its annual meeting at Waterloo, November 13-14, in connection with the Midwest Horticultural Exposition and meetings of several other societies.

Problems of outstanding importance in midwest horticulture received attention, including the variety question, location of commercial orchards, pruning, thinning, spraying, cultivation, nut culture, vegetable growing, park planning, fruit growing in the Ozarks, shrubs and wild flowers, bee culture, opportunities in commercial orcharding, and various phases of marketing.

The speakers included H. L. Lantz, O. O. Smith, H. E. Nichols, S. W. Snyder, I. T. Bode, L. H. Eammel, Minnie B. Oberman, Mrs. D. H. Culver, C. L. Fitch, F. O. Harrington, R. S. Herrick, T. E. Powers, W. G. Dumont, Oliver James, John L. Wilson, R. E. Hinds, T. J. Maney, and B. S. Pickett, all from Iowa.

Speakers from other states included R. J. Barnett of Kansas, Laurenz Greene of Indiana, W. F. B. Batjer of Arkansas, R. G. Phillips of New York, and C. E. Durst of Illinois.

The exposition, as usual, was one of the most elaborate imaginable. There were splendid group exhibits from various parts of Iowa, as well as from Nebraska. The package and plate exhibits were of practically perfect quality, and it was quite evident that the exhibitors knew how to prepare a fruit exhibit.

The following officers were elected: President, A. T. Erwin, Ames; vice-president, C. O. Garrett, Des Moines, secretary, R. S. Herrick, Des Moines; and treasurer, F. O. Harrington, Williamsburg.

NOTICE.

Statement of the Ownership, Management, Circulation, Etc., Required by the Act of Congress of August 24, 1912,

of American Fruit Grower Magazine, published monthly at Chicago, Ill., for October 1, 1924.

State of Illinois, County of Cook, ss.

Before me, a notary public in and for the state and county aforesaid, personally appeared Harry W. Walker, who, having been duly sworn according to law, deposes and says that he is the business manager of the American Fruit Grower Magazine, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher—Magazines, Inc., 53 W. Jackson Blvd., Chicago, Ill.

Editor—None.

Managing Editor—C. E. Durst, 53 W. Jackson Blvd., Chicago, Ill.

Business Manager—Harry W. Walker, 53 W. Jackson Blvd., Chicago, Ill.

2. That the owner is: (If the publication is owned by an individual his name and address, or if owned by more than one individual the name and address of each, should be given below; if the publication is owned by a corporation the name of the corporation and the names and addresses of the stockholders owning or holding one per cent or more of the total amount of stock should be given.)

Mr. C. A. Tupper, Mr. L. A. Sisley, Mr. H. W. Walker, Mr. J. E. Montgomery, Mr. S. Adams (all at 53 W. Jackson Blvd., Chicago, Ill.); Mr. C. W. Price, 15 Park Row, New York City, N. Y.; Mr. E. G. K. Meister, 501 The Arcade, Cleveland, Ohio.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.)

None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

HARRY W. WALKER,
Business Manager.

Sworn to and subscribed before me this 23d day of September, 1924.

(Seal) A. C. BAMBERGER,
Notary Public.

(My commission expires Aug. 6, 1925.)

The Orchard Home Department

by Mary Lee Adams

Winter Gardens Indoors

THE TIME has come when flower gardens lose all their charm of color, fragrance and bird note. Silence, sear leaves and scentless bowers leave an emptiness in the very heart:

"What shall I do
For my roses' sweetness
The summer round,
For all my garden's
Divine completeness
Of scent and sound?"

Their absence is part, a big part, of the sadness of farewell to summer. But the loss may be mitigated without resort to such extreme measures as the desolate poet proposes to himself:

"But I shall go
To a land men know not,
A far, still land,
Where no birds sing
And where roses blow not
And no trees stand."

In other words, summer being past, he would seek another world.

Instead of this, it would be better to get the window boxes and fern stands ready. For indoor gardens we should think more of color in mass than of any special varieties or individual blooms. This winter give yourself the pleasure of growing not just pretty flowers but the very ones whose colors will harmonize best with your rooms.

Remember you wish to bring a bit of summer indoors and that it is much easier for nature to go wrong indoors than out. Choose your color scheme with special care. You will find it makes the same difference in the looks of your rooms that being merely clothed or very well dressed makes in your own appearance.

There's no knowing what may best fit your special needs, but I can tell you of some flower borders I saw last summer flanking a short path that led across a green lawn up to the house. They were so vivid, so striking, so altogether satisfying to the eye, that I said to myself, "I'll make a note of this for my Orchard Home readers, the color would be so splendid and cheery indoors."

The lowest blooms were close-growing lavender and purple pansies. Then came big, glowing orange marigolds with here and there low crimson roses nodding over them. Why it was so unusually beautiful I can't explain. Blue and yellow being complementary colors would account for the brilliant interplay between purple and orange. Then purple and crimson are an ecclesiastical combination and probably never would have been chosen as such if they had not been specially gorgeous together.

Less Drugs, More Health

AMONG those who place all their dependence on drugs, few doctors can now be found, though the very title of M. D., Doctor of Medicine or Physician, indicates one who prescribes medicine or physic. So rapidly has the profession advanced in the practice of comparatively drugless treatments that the old Apothecary Shop, or corner drug store, is forced to eke out a flourishing trade by aid of a soda fountain, stationery department, case of cigars and a hundred side lines having little to do with the avowed object of the shop's existence.

The idea of something stronger to save than drugs is not new even among orthodox physicians. A particularly quaint old Scotch churchyard holds the tomb of Dr. Peter Low, "Founder of the Faculty of Physicians and Surgeons." He died in 1612, more than 300 years ago. Of him the interesting fact is recorded that:

"He cuired many while he leived,
So gracious he noe man grieved.
Yea when his physicks force oft failed
His pleasant purpose then prevailed."

There it is in a nut shell. Those who have a "pleasant purpose," who are "so gracious they noe man grieve," may be almost as active a source of health to those about them as the beloved family doctor himself. Another key to Dr. Peter Low's success is furnished by the further information that:

"Of his God he got the grace
To live in mirth and die in peace."

Reading his epitaph, who can help feeling that old Dr. Peter must have been an awfully good sort to know in daily life and that his presence beside the sick bed would act as a tonic? He surely imparted to his patients a healthy outlook on life and added to their happiness by his own "mirth" and "peace."

Menace of White Bread

FRUIT growers have learned by heart that "an apple a day keeps the doctor away." Now, in the judgment of no less an authority than Sir Harry Baldwin, surgeon-dentist to the King of England himself, they would do well to learn that "the whiter your bread, the sooner you're dead."

At the time of the Great War, we were told how much more nourishing the dark breads are than the snowy loaf. But in spite of making the best of it at the time, we soon returned to the white flour which, according to experts, "has been deprived of all its vitamines and most of its proteins and valuable mineral salts." I'm afraid we mentally put down some of the warnings against it to propaganda for encouraging us to save wheat.

But the warning is now repeated by the eminent Dr. Baldwin, with the additional threat that if we persist in eating too much white bread we shall lower our resistance to disease and encourage the onset of cancer. Give me a slice of brown bread please, or a good old corn dodger.

Take Care of the Teeth

THE TWO greatest reasons for taking care of the teeth are health and beauty. To these all-sufficient inducements one might add comfort and freedom from pain. Most people unfortunately know the meaning of toothache, and a good many experience the discomfort of artificial teeth. Often they fail to blame themselves for the result of neglect.

If you consider the future of your children, you will make the proper care of their teeth as important as any health measure. Daily personal attention and regular inspection by the dentist should be as much a matter of course for the child as daily wholesome fare or calling the doctor when ill. Both prevention and correction are necessary.

Bad teeth can poison the whole system. Health may be ruined by them. Crooked, prominent or ill-cared-for teeth may spoil the best looks. America has something of a reputation to keep up in this respect. When our boys went over in 1917, there was amazement and admiration expressed for their fine white teeth. In their turn they must have been surprised to see the number of young men with unsightly gaps in their gums, and the hundreds of pretty girls, pretty until they opened their mouths, with projecting, decayed or dingy teeth.

Women who wouldn't for the world be seen on the street without gloves, will carry them in their hands for an entire day. This is not a purely feminine foible. The captain of a New York excursion steamer is quoted as saying that the man who will walk the decks bareheaded all day will invariably hide in a corner if his hat blows overboard.

College boys voluntarily flaunt grotesque hats which, if ordered to wear, they would find an unbearable humiliation.

Christmas for Children

WHAT is that we hear coming down the road? It sounds like sleigh bells, and before we know it, our visitor, whoever it may be, will have arrived. How fast the jingling approaches. Dear me! if it isn't old man Christmas here once more. We can hardly believe it. The year that seemed so ong in anticipation seems so short to look back on. True, changes have come for better or worse. To some the year has brought an added prosperity. From few, we hope, has fortune turned away her face.

In the homes of the majority of fruit growers, things in general are pretty much the same. The crop probably turned out not so good as you hoped but better than you feared. You know you are a year older but you don't feel it. Even the children, of whom the neighbors say, "How fast they are growing up!" seem to you exactly the same little people as always, and around these little people center the same love and devotion.

For Richer, For Poorer

The keenest of your Christmas joys lies in witnessing their delight. For parents whose purse strings need not be too tightly drawn, it would seem an easy task to create enchantment. Every normal child has such a multitude of eager wishes. To gratify all of them would, if it were only wise, be the dearest privilege of father and mother.

But parents who are strictly limited in means find themselves at less of a disadvantage than would at first appear. Unspoiled children are by no means critical. It has often been noted that children generally neglect their most costly gifts to revel in some cheap trifle that has a special appeal.

So a mother who has little to spend save a wealth of love and understanding, may well be a more successful joybringer than she who ransacks the toy shops with the idea that the greater the cost the more desirable the gift. Too many toys all at once sometimes defeat their own end. They bring the same satiety as too much food, and the edge of enjoyment is dulled for the whole lot of them.

Three Springs of Joy

Children anticipate three separate joys at Christmas, and they usually rank in the following order: First, the gifts they will get; then the things they will have to eat; and lastly, the gifts they will give. As they grow older, this order gradually changes until it finally becomes fixed at, first, what they will give; second, what they will get; and third, what they may have to eat.

But the unregenerate youngster, the natural man or woman so to speak, clings in early years to self as the first consideration. We do not need to be able to look into the mind of each child to know which things outrank the rest in their esteem. Just a little effort of memory, even if not too flattering to ourselves in the dim past, will serve to enlighten us in this respect. How can doting parents make the most of each of these three sources of joy for the children?

The Right Kind of Gift

First, in regard to the gifts they are to get. The wisest parents, even if well able to afford expensive presents, will make an effort to please the children with simpler things. There are few creatures less satisfactory to themselves and others than the child whose fresh sense of appreciation has been blunted by costly indulgence. Such a child, whatever its years, is no longer young. A lack of zest in simple pleasures is one of the most distressing and most general accompaniments of age. Strive to ward off that evil day for yourself as well as for your children. You have a much better chance of success in this than if you had to cope with the artificial conditions of city life.

Just here I may say that Christmas hardly seems the time to inculcate useful lessons with useful gifts. If a boy loves history, he may be delighted with a volume that combines information with romance. But don't make the mistake of giving anything like that to his brother whose eyes are not big enough to take in every detail of some mechanical device. I've seen a little girl who should have loved her needle, but emphatically didn't, in tears over the dear little silver thimble intended to arouse her lagging enthusiasm. Such gilded pills may better be administered on days when pure pleasure should not take precedence over practical things.

A Little Stomachache

Second, in regard to food. We've considerable sympathy with the youngster who demanded "What's the use of having a doctor for a Daddy if I can't have a little stomachache on Christmas?" It must be a rigorous disciplinarian who would insist on the same degree of moderation on Christmas as on other days.

Yet there's no real kindness in giving such free rein on that great day that the whole holiday week before New Year is spoiled by indigestion and consequent fretfulness and discontent. A pretty good rule for the young kiddies' Christmas dinner is similar to the one for their Christmas gifts. Let there be plenty of it, be sure the dishes are favorite ones, but avoid too much richness or too great variety. If you wish to entertain your own friends on different fare, better not let it be at the children's feast.

To Give or to Receive

Last, but furthest from least in the best sense, is the joy children may derive from giving. It certainly is a wholesome joy morally and the more of it the better for the giver. Is anything more naively charming than the glow of satisfaction (a trifle self-righteous it may be) on the faces of small girls and boys as they give Father the surprise they saved their pennies for, or offer Mother some weird specimen of their own handiwork?

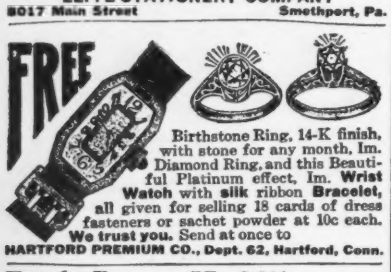
This feeling, even when comically disproportioned to the gift, ought to be encouraged. Only the child who spends something in time, thought or money on others can experience any understanding gratitude for what itself receives. Even very young children can be taught the lesson of sharing with others. There are always little friends and companions who have less than they, and a cheerful disposition to do as they would be done by will mean very much to them in later life.

There still remains for the children the greatest happiness of all, one that they may not consciously have anticipated but which they would sorely miss, without which, indeed, there would be no sunshine in their hearts even on this day of gifts and goodies. This is the joyous sympathy of father and mother in all their little excitements, the willingness to "watch me play" so dear to little hearts, and as the day wears weary, the understanding that can soothe tired nerves and keep unruly tempers sweet through the delicious but trying strain upon them.

A most Merry Christmas and Happy New Year to Orchard Women and to their families.

Love me not for comely grace,
For my pleasing eye and face,
Nor for any outward part
No. nor for an honest heart,
For these may fail and turn to ill
So thou and I must sever.
Keep, therefore, a true woman's eye
And love me still but know not why—
So thou hast the same reason still
To dote on me forever.

—ANON.



Ford Runs 57 Miles on Gallon of Gasoline.

A new automatic and self-regulating device has been invented by John A. Stransky, 4520 Fourth St., Pukwana, South Dakota, with which automobiles have made from 35 to 57 miles on a gallon of gasoline. It removes carbon and reduces spark plug trouble and overheating. It can be installed by any one in five minutes. Mr. Stransky wants distributors and is willing to send a sample at his own risk. Write him today.—*Adv.*

Transplanting Large Apple Trees

(*Continued from page 9*)

top of a post placed about the distance from the tree of the encircling trench. By pulling the tree loose in this manner many roots which might be broken by a straight pull will be saved intact.

In removing the trees from their original position to the new location, the writer has used a flat-top wagon, simply laying the top of the tree as far forward on the wagon as possible and letting the roots hang and partially drag behind the wagon. This method might very well be improved upon by installing a crane on the back of the wagon so that the roots could be raised free from the ground and the top be allowed to drag on the ground.

Setting the Tree in Its New Location

The tree must be planted, of course, in a hole already prepared for it in its new location. Ordinarily, it will be placed in position by driving the wagon or conveyance which has been used in transporting it across the hole and dropping the roots as nearly into position as possible. If the top has been lying on the wagon and the roots are suspended behind it, there will be comparatively little trouble in raising it to a vertical position, providing the hole has been dug large enough to accommodate all the roots easily. The operator must fit his ingenuity to the problems presented by individual trees and locations as circumstances require.

Good earth must be thrown on the roots, which should be placed in as natural a position as possible at approximately the same depths as in the original location. The soil should be firmed thoroughly about the roots and the hole filled three or four inches deeper than the original grade line to allow for settling and to provide for drainage.

Results Will Depend on Care Employed

The certainty with which trees of these sizes will grow will depend not only upon the skill with which the moving has been done, but also upon the care which the trees receive during the first year or two after moving.

The re-establishment of the moisture connections between the soil and the living parts of the tree before the tissues die by drying out is the essential factor in the work. Favorable conditions will be furnished if a heavy mulch of straw or stable manure is placed over all the soil occupied by the roots in their new location. Indeed, if this mulch is provided the work is almost certain to be a success. The trees should not be allowed to bear a crop the first year after transplanting, and the second year only a light one. There is considerable danger the second year of over-cropping, because the general effect of removing is to cause the trees to set fruit buds quite freely the year they are removed.

California Growers Warned Regarding Mealy Bugs

THE HORTICULTURAL Commission of Los Angeles has warned citrus packing house managers of the danger of spreading insects and diseases through unrestricted movement of pickers, pruners, machinery and appliances from one community to another. Precaution should be taken to prevent the introduction of the *Citrophilus* mealy bug to localities which are as yet uninfested. Before moving materials from one place to another, inquiry should be made as to the presence of the insect, and, furthermore, all materials should be carefully disinfected. Smudge pots are said to be very likely carriers of this insect.

In answering advertisements please be sure to give your full name and complete address.

CHATS WITH FRUIT GROWER'S WIFE

By HAZEL BURSELL

Making Christmas Candies

CANDY making is an art, but fortunately for the lovers of "sweets," it is an art which can be acquired. There are candies and candies, but envied is she whose products are always the acme of perfection. Good results in candy making depend not so much on the recipe as on the knowledge and skill of the maker. It is to contribute my bit to the general knowledge that I write this article.

Success in making candies with a syrup foundation depends on two things—boiling the mixture to exactly the right stage and no further, and handling the mixture during and after cooking in such a way as to prevent "graining" (granulating of the sugar). The causes of graining will be discussed further on.

Tests in Candy Making

The dependable and accurate method of testing syrup for consistency is by temperature as indicated by a candy thermometer. Such a thermometer will be rather expensive to buy but will be found invaluable where any quantity of candy or other confections are to be made. It eliminates "guess work." The modern recipe indicates the proper temperature to which that particular candy should be boiled. The thermometer should be dipped into the syrup and the temperature noted. The instant the temperature reading is the same as that given in the recipe, the candy mixture should be removed from the fire.

If you have no candy thermometer, you can learn to know the various stages from the "thread" and cold water tests. Experience is the main requisite to success in using these tests. Eleven tests are considered for boiling sugar, and they are as follows:

Small thread	215 degrees Fahrenheit
Large thread	217 degrees Fahrenheit
Pearl	220 degrees Fahrenheit
Large pearl	222 degrees Fahrenheit
The blow	230 degrees Fahrenheit
The feather	232 degrees Fahrenheit
Soft ball	238 degrees Fahrenheit
Hard ball	248 degrees Fahrenheit
Small crack	290 degrees Fahrenheit
Crack	310 degrees Fahrenheit
Caramel	350 degrees Fahrenheit

The home candy maker will need to use only the thread, ball and crack stages. The "thread" stage is indicated when the syrup will spin a fine thread from the spoon. The "ball" and "crack" stages are indicated by cold water tests. When a drop of the syrup forms a soft, pliable ball in cold water, it has reached the "soft ball" stage. A firmer ball indicates the "hard ball" stage. When the syrup becomes hard and brittle in cold water, the "crack" stage has been reached. The "caramel" stage will be easily recognized by the light brown color. The kettle should be taken from the fire while the tests are being made or the boiling process may go too far.

Correct Fondant Method

Fondant is the basis of all French candies. It requires knowledge and skill to make but if instructions are followed carefully, a fine, even, creamy-textured candy should result. Here is the recipe for plain fondant: 2½ pounds sugar; 1½ cups hot water; and ¼ teaspoon cream of tartar. Put ingredients into a smooth granite stewpan. Stir, place on range and heat gradually to boiling point. Boil without stirring until, when tried in cold water, a soft ball may be formed that will just keep its shape, or until it reaches a temperature of 238 degrees Fahrenheit. After a few minutes of boiling, the sugar will adhere to the sides of the kettle. This should be washed off with a damp cloth or with a pastry brush first dipped in cold water. As soon as the mixture has reached the desired stage, remove from the fire and pour on a slightly oiled platter or marble slab. Having the platter cold and wet will serve equally well. Do not scrape the pan in pouring the syrup into the platter. Let stand a few minutes to cool to 100 to 110 degrees Fahrenheit. It will then be lukewarm and may be dented by the finger tip without sticking to the finger. It should not be hard around the edge, however. When cool enough, work the mixture with a wooden spatula or other flat utensil, bringing the candy from the outside toward the center. Work until white and creamy, then knead with the hands until perfectly smooth. Place in a bowl, cover with oiled paper to exclude air that a crust may not form on top, and let stand at least 24 hours. Always make fondant on a clear day, if possible, as a damp, heavy atmosphere has an unfavorable effect on the boiling of syrup.

Causes of Graining

Graining, or the recrystallization of the sugar, has many causes, most of which are listed below. You must avoid these pitfalls if you wish good results in making fondant.

1. Lack of acid or glucose. Cream of tartar is added to meet this requirement.
2. Boiling before the sugar is dissolved. Bring to the boiling point gradually.
3. Stirring while boiling.
4. A rough, cracked pan or the formation of crystals on the sides of the kettle, giving a nucleus for crystallization in the mass.
5. Too rapid boiling, throwing up crystals which fall back into the syrup.
6. Too high temperature, 238 degrees Fahrenheit insuring the best results. This is known also as the "soft ball" stage. If possible, get an expert candy maker to demonstrate the exact tests.
7. Pouring the syrup on a rough surface or scraping out the pan onto the mass of syrup.
8. Working too slowly or too soon. Wait until the syrup has cooled to 100 degrees Fahrenheit, or luke warm, and you can dent the surface with your finger. The syrup should be warm but not too hot to handle or too stiff to work. Use preferably a wooden spatula first, working from the edges inward, and later knead with the hands.
9. Lack of kneading. Brisk hand kneading will often save a mass that threatens to "grain" under the spatula.
10. Leaving the fondant exposed to air when kneaded instead of packing it away in a jar or bowl covered with oiled paper or a damp cloth to "ripen." Fondant should stand at least 24 hours before being made up. Longer ripening under proper conditions produces a creamier fondant. Some candy is condemned as being "old" when it is really too fresh. Fondant is best when made weeks before it is to be used.

Is Foundation Candy

Fondant may be used as the foundation for dozens of candies, all of them delicious. It may be moulded and dipped in melted chocolate to form bonbons. Fondant is often melted and used as a coat for other candies, cakes, dried, fresh or glace fruits, nuts and

fruit paste. Combined with gelatine, it forms soft "Turkish" nougats, marshmallows or Italian creams. Melted, flavored and dropped on oiled paper to form flat disks, it becomes after-dinner mints. Either with or without nuts, it is used as a filling for stuffed dates, figs, etc. Kneaded with nuts or fruit and confectioners' sugar, it forms "loaves" for dipping centers. Creamed almonds or walnuts are made by pouring melted fondant on nuts and shaking to cool them, or leaving in a sheet and cutting in bars. Three-layer creams may be made by dipping together three colors of fondant in layers, or fondant and nut or fruit paste layers. Other uses will suggest themselves to the lover of good candy.

In making candies, especially the fondant varieties, guard against too much color and flavoring, as both may easily be overdone and the candy spoiled. A delicate color is much to be preferred. A combination of flavors will sometimes produce an unusual and tantalizing flavor. It is best to add color to fondant by dipping a small wooden skewer in the coloring paste, taking up a small quantity and dipping the skewer in the fondant.

Dipping Bonbons

Either fondant or dipping chocolate may be used for dipping bonbons. If the fondant is used, it may be colored and flavored to suit the individual taste. Use only regular specially prepared confectioners' "dipping chocolate" for home dipped bonbons. The ordinary chocolate cannot be successfully used. During the dipping, keep the fondant or chocolate mixture over hot water that it may be kept at the right consistency. For dipping, use a two-tined fork or a confectioners' bonbon dipper. Drop the prepared centers in the fondant one at a time, stir until covered, remove from the fondant, put on oiled paper, and bring the end of the dipper over the top of the bonbon, thus leaving a tail-piece, which shows that the bonbons have been hand dipped. Stir the fondant between dippings to prevent a crust from forming.

Prepared blanched almonds are very expensive when purchased in a store. It will be much more economical to blanch the nuts at home, and the process is really a simple one. Cover Jordan almonds with boiling water and let stand two minutes. Drain, put into cold water, and rub off the skins. Dry the nut meats between towels. To blanch filberts, shell, cover with boiling water and let stand on range for six minutes. Drain and remove skins, using a small vegetable knife. Pecans are best purchased shelled by the pound as they are difficult to shell without breaking.

Just a word of warning about fondant candies. I have seen so many hopefully made candies opened, after being sent by mail to some favored friend, in an unrecognizable mess or in hard, stony lumps that I would warn inexperienced makers that undipped bonbons, while quite nice for immediate eating, are absolutely unsuitable for keeping or packing. Dipping either in fondant or chocolate excludes the air and gives a softer center and firmer, less crushable outside. Purchasing the small crinkled paper "cups" always found in commercially packed candy boxes, using a sheet of cardboard between layers, and lining the box with wax paper, will go a long way towards keeping candy to be shipped in perfect condition. All sticky candies, whether for home consumption or for shipping, should be wrapped in pieces of wax paper.

Serve with Nuts

Home-made candies are much better for folks from the health standpoint than "store" candies, as only the best materials are used in the home products. Then, think of the fun the family has in making the candies! The complaint is often made that home-made candy is too sweet. The best solution for this problem is to use plenty of nuts of all varieties in and with the candies. The richer confections are always better when served with nuts. The "hard" and "chewing" candies will not be so sweet and rich as the chocolate bonbons and fudges. Fluffy candies, such as divinities and marshmallows, are not nearly so concentrated. To me, Christmas would not be a real Christmas without the fun of making and eating our favorite candies.

Recipes for Christmas Candies

METHODS for making candies are not much use without the recipes, neither can recipes be used successfully without methods—both are necessary. The methods have been given, and now come the recipes. The recipe for plain fondant was given in the preceding article so it need not be repeated. A few of the fondant variations will be given here. Let's enjoy a greater variety of "sweets" this Christmas!

Chocolate Caramels

2½ T. butter
2 c. molasses
1 c. brown sugar
½ c. milk
3 sqs. chocolate
1 t. vanilla

Put butter into kettle and when melted add molasses, sugar and milk. Stir until sugar is dissolved and bring to boiling point. Then add chocolate and stir constantly till chocolate is melted. Boil until a firm ball may be formed in the fingers when tried in cold water, 244 degrees Fahrenheit. Add vanilla just after taking from fire. Turn into a buttered pan, cool, and mark in small squares.

Log Cabin Roll

Work chopped nuts, walnuts or almonds, in any desired quantity into ordinary white or chocolate fondant. Form into a long roll about ¾ inch in diameter and dip roll in melted dipping chocolate. Roll in chopped brown almonds, walnuts or browned cocoanut before chocolate has "set." Cut in slices when firm.

French Nougat

½ lb. confectioners' sugar.
Confectioners' chocolate.
¼ lb. almonds, blanched and finely chopped.

Put sugar in saucepan, place on range, and stir constantly until melted but not caramelized. Add almonds and pour on an oiled marble slab or platter. Fold mixture as it spreads with a broad-bladed knife, keeping it constantly in motion. Divide in four parts and as soon as cool enough to handle shape in long rolls about one-third inch in diameter, keeping rolls in motion until cold. When cold, snap in pieces 1½ inches long. To do this, hold roll over knife edge and snap at desired point. Melt confectioners' chocolate over hot water, beat with a fork until light and smooth, and when slightly cooled, dip the pieces in chocolate, and with a two-tined fork or bonbon dipper remove from chocolate onto oiled paper, drawing dipper through top of each the entire length, thus leaving a ridge. Chocolate best adapted for dipping bonbons and confections must be bought where confectioners' supplies are kept.

Chocolate Marshmallow Fudge

2 c. sugar
1 c. top milk
2 sqs. chocolate
3 T. butter
1 t. vanilla
10 marshmallows

Put sugar, milk and chocolate in saucepan. Heat gradually to the boiling point and let boil until mixture will form a soft ball when tried in cold water (238 degrees Fahrenheit). Remove from range, add butter and as soon as butter is melted, beat until creamy. Add vanilla and fold in marshmallows cut in quarters. Turn into a buttered pan, cool and cut in squares.

Peanut Butter Fudge

2 c. sugar
⅔ c. milk
4 T. peanut butter
1 t. vanilla
Few grains salt

Put sugar and milk in saucepan, bring to boiling point and let boil until a soft ball may be formed when mixture is tried in cold water (238 degrees Fahrenheit). Remove from range, add remaining ingredients, let stand till somewhat cooled, and beat until creamy. Turn into a buttered pan to ¾ inch in depth, cool slightly and cut in squares, using a sharp-pointed knife.

Turkish Delight

1 oz. gelatine
½ c. cold water
1 lb. sugar
½ c. boiling water
Grated rind 1 orange
Juice 1 orange
Juice 1 lemon
Red coloring
½ c. chopped nut meats

Soak gelatine in cold water until swelled. Put sugar and boiling water in saucepan, bring to boiling point, add gelatine and let simmer (not boil) for 20 minutes. Add flavorings and coloring, strain, add nut meats, and turn into a bread pan, rinsed in cold water, to a depth of 1 inch. Let stand until cold and firm, remove to board, cut in cubes and roll in confectioners' sugar. The nuts may be omitted.

Chocolate Fondant

1 c. plain fondant
2 sqs. chocolate
1 t. vanilla

Melt the chocolate over warm, not hot, water. Add this to firm fondant broken in pieces, and knead until well blended. If preferred, 3 T. cocoa may be used instead of the melted chocolate.

Molasses Candy

2 c. Porto Rico molasses
⅔ c. sugar
3 T. butter
1 T. vinegar

An iron kettle with rounding bottom (Scotch kettle) or copper kettle is best. If one has no copper kettle, a smooth granite kettle may be used.

Put butter in kettle, place over fire, and when melted add molasses and sugar. Stir until sugar is dissolved. When the mixture begins to boil stirring is unnecessary, but when nearly cooked it should be constantly stirred. Boil until a drop of the mixture becomes brittle when tried in cold water. The temperature for this is from 290 to 310 degrees Fahrenheit. Add vinegar just before taking from fire. Pour into a well buttered pan. When cool enough to handle, pull until porous and light-colored, allowing candy to come in contact with tips of fingers and thumbs, not to be squeezed in the hand. Cut in small pieces, using large shears or sharp knife, and then arrange on slightly buttered plates to cool.

Maple Fondant

1¼ lbs. maple sugar
1¼ lbs. sugar
1 c. hot water
¼ t. cream of tartar

Break maple sugar in pieces and add remaining ingredients. Boil and work the same as for plain fondant. Maple fondant is especially good when nuts are added.

Abbreviations

1 c. equals 1 cupful.
1 t. equals 1 teaspoonful.
1 T. equals 1 tablespoonful.
1 oz. equals 1 ounce.
1 lb. equals 1 pound.
1 sq. equals 1 square.
All measures are level.

No. 2262—Becoming Slim-Line Dress.
Cut in sizes 36, 38, 40, 42, 44, 46, 48 and 50 inches bust measure. Size 36 takes 5 yards 40-inch material.
The hot-iron transfer pattern No. 717 which comes in blue and yellow, costs 15 cents extra.

No. 1942—Practical Apron.
Cut in sizes 36, 40, 44 and 48 inches bust measure. Size 36 takes 2⅝ yards 36-inch material.

No. 2205—Pretty Apron.
Cut in sizes small, medium and large. The medium size takes 2¾ yards 36-inch material.

No. 2193—Tunics Popular.
Cut in sizes 16 years, 36, 38, 40, 42 and 44 inches bust measure. Size 36 takes 4¾ yards 40-inch material with ¾ yard 36-inch contrasting.

No. 2218—One of the Season's Favorites.
Cut in sizes 16 years, 36 38, 40 and 42 inches bust measure. Size 36 takes 3¼ yards 40-inch material with 1⅝ yards 20-inch contrasting.

No. 2242—Slenderizing Corset Cover.
It would be nice of silk, cambric, muslin or crepe. Cut in sizes 36, 38, 40, 42, 44, 46, 48 and 50 inches bust measure. Size 36 takes ¾ yard 36-inch material.

No. 2243—Comfortable and Good-Looking.
Cut in sizes 24, 28, 32 and 36 inches waist measure. Size 28 takes 3 yards 36-inch material.

No. 2199—One of the Very Latest!
You can make this becoming cape dress of dark blue flannel or twill and line the cape with red and apply red bone buttons down the front and it will be attractive. Cut in sizes 16 years, 36, 38, 40 and 42 inches bust measure. Size 36 takes 3⅝ yards 40-inch material.

No. 2013—Round Pillow.
Cut in one size only and for material requirements see pattern envelope.

No. 1999—Doll's Set of Clothes.
This set consists of rompers, one-piece slip-on nightdress, shirt, drawers, cap and bib. Any little girl would be pleased with a set of clothes for her dolly if she found them among her presents on Christmas morning. The pattern cuts in sizes for doll 12, 14, 16, 18, 20 and 22 inches high. For material requirements see pattern envelope.

No. 2241—Cuddly Rag Toys.
There is nothing more dear to the heart of a child than a rag doll. If you want to delight some little girl on Christmas morning, make her a rag doll and she will love it. Cut in one size only. For material requirements see pattern envelope.

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Pruning the Peach Tree

(*Continued from page* 14)

when the growth is one to two feet in length, and follow it up with another pruning if necessary.

Winter Injury

Some winter-damaged trees may be injured past any hope of saving them, but most of them can probably be saved. After the trees leaf out and start a little, cut them back more or less according to the amount of the injury. Follow at once with liberal application of nitrate and with good cultivation.

Open Centers

It is very important to have centers of trees rather open, and in older trees the tops of the main limbs should also be open. The purpose of this is to encourage twig and small limb development lower down in the tree, even down to the trunk. If these die out, it is an indication that the centers and tops are not open enough. If they develop into strong shoot growths of five to 10 feet, it indicates that the centers are too open.

Annual Pruning

The trees should be pruned some every year. We cannot get away entirely from some pruning and keep the trees vigorous enough for large production, but it can be reduced to the minimum by right methods of pruning and the proper amount of fertilization and cultivation. Contrary to the common practice, prune lightest in the no-crop years and heavier during the crop years. Of course, late spring frosts will sometimes interfere with such a program. The light pruning in the off year will encourage as many growing points as possible and thus tend to hold the growth down.

Summary

Pruning does not invigorate a tree but tends to dwarf it. The peach tree is no exception to this rule. The more a tree is pruned, especially a young tree, the more it needs pruning. To make a young tree grow quickly and come into early heavy production, direct and train the growth by summer pruning. Annual cutting back to make a tree more spreading has the opposite effect. The more heavily it is cut, the more upright and less spreading it becomes.

For best fruit production, trees must be in the proper vigor or vegetative condition. Pruning, fertilizing and cultivation must work together to bring about the desired condition.

If Rust Mites Give Trouble Spray Them With Lime - Sulphur

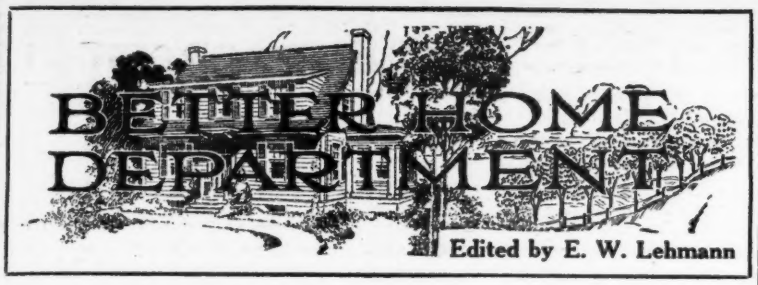
RUST mites are still appearing in some citrus groves, and recent observations at the Florida Experiment Station have found them to be colonizing very strongly, so that an outbreak may occur at any time, especially on fruit from June bloom.

An outbreak is especially dangerous at this time as many growers are not in the habit of looking for the mites at this season and are apt to be caught napping. So the grove should be looked over at once and if the mites are common, sulphur in some form should be applied.

The form most used in the past has been the lime-sulphur solution. Use it at the rate of one gallon of the concentrated lime-sulphur solution to 75 gallons of water. Another method that has given good results this year is the dusting of the trees with powdered sulphur with which has been combined an equal weight of thoroughly air-slaked lime.

Vell! Vell!

"I vant some powder."
"Mennen's?"
"No, vimmen's!"
"Scented?"
"No, I vill take it mit me."



Planning Farm Buildings

THE RESULTS of farm management studies indicate that the annual farm building costs amount to 10 per cent of their total value. This means that the farmers' bill for buildings is between 75 and 100 million dollars a year, or an average of over $300 a farm. You might well check these figures against your building costs and see how they compare. There is no better time for the fruit grower to study his building needs, with the idea of reducing his costs and making his work more efficient, than during the long winter evenings.

While the average value of buildings per farm in Illinois is about $3100, the value of buildings on many fruit farms is more than $5000, which means that the annual cost is more than $500 a year. This does not mean that there is an annual outlay of cash of this amount, because a large part of the cost is the labor put on the buildings in making repairs. A cost that is overlooked by most farmers that should be charged up to buildings is the value of wasted time. Much time is wasted on many of our best fruit farms due to poor building design and poor arrangement.

Many Farm Buildings Show Lack of Plan

The early pioneer farmer was interested primarily in getting his fields cleared and under cultivation so he might make a living. Very few of the old log cabins and shacks that mark that period in agricultural development now remain. The great development in agricultural production during the last 50 years has had a marked effect on the farmer's building program. While it has resulted in better buildings, better homes, and better farmsteads in many instances, the cluttered conditions of many farmsteads indicate a lack of plan and lack of study of the problem.

The two chief points to keep in mind in improving farm buildings is, first, to study carefully the requirements of the individual buildings and, second, to study the relation of the different buildings making up the farmstead. With the many helps available, there is little excuse now for a poorly planned house or barn on the farm. Nearly every state college has blueprints that are helpful. Standard plans of houses, barns, storage houses, etc., may be secured at a slight expense and are a source of many valuable suggestions. Bulletins may be secured from the same institutions. Another good source of helpful suggestions is from the farm journals and from commercial concerns manufacturing special farm building equipment.

A Good Plan Should Be Prepared in Advance

When a new building is to be erected, the problem should not be turned over to a builder or carpenter without a careful plan being worked out. The man who has studied his problem can take a standard plan such as secured from his agricultural college and modify it to suit his needs. In many cases it pays to secure the services of an architect in working out the details of plans for the main buildings for the farm. Many serious mistakes can be avoided, and many economies can be practiced by making a careful study of each problem.

In studying the buildings already erected, and planning new buildings, the question of convenience should always be kept in mind. This is just as true of the barn as it is of the house. The location of doors and feed rooms, the position of the barn with reference to the house, the field, and the pasture are all items affecting the matter of convenience. Much time may be saved by having a conveniently arranged plan.

Sanitation Important

Sanitation is a factor that cannot be overlooked either in the remodeling of old buildings or in the planning of new buildings. Ample drainage should be provided. Plenty of sunlight is a large factor in making conditions sanitary. The tendency in building design is to put in more windows than formerly. The materials used in construction play an important part in making a building easy to clean. In recent years the use of concrete for floor and walls has contributed much to the sanitary condition of farm buildings.

Durability is another requirement that every owner should keep in mind in improving his buildings. In recent years a more permanent type of construction has been used. Concrete and clay products are being used for permanence as well as for making conditions more sanitary.

Don't Overlook Appearance

A factor that has been too often overlooked in the planning of all farm buildings is beauty. We are all liable to emphasize too much the question of utility in buildings and not think enough about beauty. A beautiful house and attractive outbuildings will give a satisfaction that cannot be obtained from a group of buildings designed for utility alone.

In studying the arrangement or grouping of buildings, economy of space and convenience for doing chores must be kept in mind. Adequate drainage and sunlight are also essential factors. It must also be remembered that a well-planned farmstead is attractive and beautifies the landscape, the value of which cannot be measured in dollars and cents, but in satisfied living.

Fixing the Poultry House

MANY fruit growers are liable to neglect the poultry house when their chief interest is centered on fruit. It must not be forgotten that the winter egg production is dependent to a large extent on the condition of the house. Good ventilation is essential, but a draughty condition must be avoided. This is not only true for localities where it is very cold, but also where the winters are not so severe.

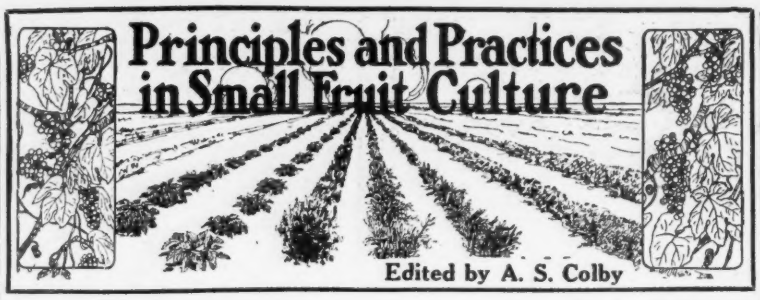
A layer of straw approximately one foot thick, forming a ceiling over the roosts, is often advocated as a means of retaining warmth and eliminating excess moisture. Plenty of window area on the south side of the house is needed so that the floor will be flooded with sunlight. Pests can best be avoided or eliminated by a thorough cleaning of the house and surroundings, by the use of disinfectants and by the application of whitewash.

Reckless of Him

First Cannibal: "The chief has hay fever."

Second Cannibal: "Serves him right; we warned him not to eat the grass widow."

Principles and Practices in Small Fruit Culture



Edited by A. S. Colby

Now Is the Time to Prepare Grape Cuttings

IN SOME localities, grapevines are pruned and trained during December; in others, it is thought advisable to wait until later on in the winter. Some hold that winter injury to pruned vines is more common than to those left unpruned at this time. If propagating wood is desired, however, now is the time to cut it. Some pruning may be done at the same time. It is advisable to secure the cuttings before the wood has dried out to any extent. Extremes of temperature are ordinarily injurious to grape wood. If taken early in December, this wood will be in good condition.

Making and Caring for Grape Cuttings

The cuttings should be taken from one-year-old wood only. They should be straight, healthy and well matured. In length and diameter they will vary according to the variety, but either two or three "eye" cuttings, if the eyes or nodes are fairly close together, are satisfactory. Canes approximately pencil size or a trifle larger may be used. The cuttings should not be allowed to dry out. Bunch them at once into bundles of about 25. Tie and label them, using wire or other material which will not rot during the winter. Use a label which will not be undecipherable next spring. Dig a hole about two feet deep in a well-drained, protected spot, preferably with a southern exposure, and place the bundles of cuttings *butts up* in this pit so that the upper ends are four or five inches from the ground level. Fill in the pit to the top and mulch with a slight cover of straw. The setting of the cuttings upside down will encourage the callousing over of the butts and will discourage sprouting of the upper buds. By spring some cuttings may have begun to develop roots. They should be lifted with care and set in the nursery row.

Sanitation in the Vineyard

The writer has never seen a profitable unsprayed vineyard. Insects and diseases are so generally prevalent that clean, well ripened fruit cannot be expected unless a systematic spraying schedule is followed out.

In the vineyard, however, sanitation in general is an effective aid to spraying in controlling grape troubles. Clean cultivation until mid-summer breaks up the hiding places of the grape root worm and covers, to some extent, dead foliage infected with black rot. Burning the dried grasses at the ends of the rows and along the fence row nearby at this time of year will destroy great numbers of grape leaf hoppers which hibernate in such trash. A green cover crop does not harbor them.

Mulching the Strawberry Bed

IT IS generally worth while to provide some winter protection to the strawberry patch in the form of a mulch. Extremes of winter temperature cause intermittent freezing and thawing where a patch is unprotected, and many plants are winter-killed by heaving. Mulching also protects the roots and crowns from the drying effect of winter winds. If carefully handled, a mulch may sometimes be advantageous in keeping the plants from starting into growth too early in an abnormally early spring. Where a mulch is used, weeds are kept down during the following fruiting season, moisture is conserved for the plants, and the berries are cleaner.

Among the materials used for mulching are strawy stable manure, straw of various kinds, wild hay, leaves and cornstalks. Wheat straw is one of the best mulches. Oat straw is often used, but it may pack rather tightly, and the grain remaining in the straw often gives trouble the following season by germinating. On a windy site, a loose mulch may be blown away. Cornstalks are valuable in holding down lighter materials and on a small patch may be used in connection with leaves.

The mulch should be applied in late fall after the plants have become dormant. In northern sections, the ground may have begun to freeze, but it should not be frozen to a greater depth than two inches before the mulch is applied. Early in December will usually be a favorable time. The mulch should be spread uniformly over the field, covering the plants not more than two inches. Heavier applications may smother the plants. From two and a half to five tons of straw are sufficient for an acre. Avoid the use of frozen lumps of straw or heavy applications of the chaff from the bottom of the straw stack.

In some localities it is almost impossible to get materials satisfactory for mulching. In such cases it may be advisable to grow a mulch, either by growing a crop on other land for this purpose or by growing the mulch on the strawberry bed between the rows. Where the first practice is followed, such large growing annuals as corn or millet may be planted broadcast, close enough together to prevent too coarse a growth and late enough to prevent their seed from maturing. Sweet clover may also be used to advantage for this purpose if properly handled.

When a mulch is to be grown on the bed, oats, barley or some similar crop may be sown between the strawberry rows in late summer, in time for it to make some growth before cold weather. This material will mat down between the rows and some additional mulch will be needed to cover the plants. It may, however, grow too rank and reduce the supply of necessary moisture needed by the strawberry plants. In one case the writer noticed a bed killed by growing such a crop between the rows for the purpose of mulching.

Damage From Grape Root Worm

Question: I noticed some of the leaves on my grapevines showing a yellow color. The grapes did not ripen up but stayed green and were of poor quality. What was the trouble? Will blue vitriol kill root worms if spread on the soil under the vines? How much should be used?—R. E M., Colorado.

ANSWER: In some sections the grape root worm is becoming a serious pest, especially in unsprayed vineyards. It is well to look for them on the roots of vines which show any considerable amount of yellow foliage, especially if the fruit is not ripening properly. A systematic spray program should be followed for the control of the beetles while present on the leaves and before they deposit their eggs. Cultivation in the vineyard helps to break up the resting places of the worms. Blue vitriol is of no value spread on the ground as an insecticide.

Classified Advertising

Classified Advertising

15c a word, set uniform style. Count each initial, abbreviation, number or group of numbers as one word. Write advertisement on separate sheet. Cash must accompany order.

Forms close 15th of month.

FARMS AND ORCHARDS

OREGON—AMERICA'S FINEST FRUIT AND farming country. The fine quality and flavor of Oregon fruits and nuts place them in big demand in all markets. Prunes, apples, cherries, pears, peaches, loganberries, strawberries, blackberries and grapes. English walnuts and filberts. Fruit land available in small and large tracts, and at common-sense prices. Co-operative fruit associations are going concerns. An ideal climate for fruit growing and general farming. Dairying, poultry, hogs, vegetables. Fine paved state-wide highways free from land tax. Mild winters, cool summers, no destructive storms. Banking and business interests united with farmers to provide markets and make agriculture a success. FREE official bulletins and information. Write Land Settlement Dept., Room 619, Portland Chamber of Commerce, Portland Oregon.

NORTH GEORGIA BARGAIN, 495 ACRES 55 miles north of Atlanta, ideal for apple orchard. Elevation 1500 feet, partly cleared, fertile soil, near railroad, mountain creek that will produce electric power; four dwellings. A place to repay richly under present scientific methods. Deal directly with owner. Write for free circular. B. S. Crane, Winder, Ga.

3000 TREE, 22-YEAR-OLD MICHIGAN ORchard. Worth $40,000, for $19,000. $5000 cash required. Address P. O. Box 1060, Chicago.

PEACH AND PECAN ORCHARD—25,000 PEACH trees, 1500 pecans, 2,500 acres land near Albany, Georgia. Fully equipped. Fine prospects. Will be sold at bargain. Fugazzi Bros., 28 West Front, Cincinnati.

ORCHARD AND IDEAL SUMMER HOME, ADjoining the famous Bedford Springs Hotel. Illustrated folder. Rush C. Litzinger, Bedford, Penna.

VINEYARD, ORCHARD, IDEAL SUBURBAN home, six miles from Philadelphia, Pennsylvania. Trolley; state road. $32,000. Address C-113, American Fruit Grower Magazine.

WANTED—TO HEAR FROM OWNER OF FARM for sale, for fall delivery. O. K. Hawley, Baldwin, Wis.

HELP WANTED

EARN $110 TO $250 MONTHLY, EXPENSES paid, as Railway Traffic Inspector. Position guaranteed after completion of 3 months' home study course or money refunded. Excellent opportunities. Write for Free Booklet G-100. Stand. Business Training Inst., Buffalo, N. Y.

"WORK FOR UNCLE SAM." GET GOVERNment positions. Men-women, 18 up. $95-$192 month. Common education sufficient with our coaching. List positions—free. Write immediately. Franklin Institute, Dept. T-98, Rochester, N. Y.

ALL MEN, WOMEN, BOYS, GIRLS, 17 TO 65, willing to accept Government Positions, $117-$300, traveling or stationary, write Mr. Ozment, 259, St. Louis, Mo., immediately.

EARN $25 WEEKLY, SPARE TIME, WRITING for newspapers, magazines. Experience unnecessary. Copyright book free. Press Syndicate, 979, St. Louis, Mo.

PATENTS AND TRADE-MARKS

INVENTORS—WHO DERIVE LARGEST PROFits know and heed certain simple but vital facts before applying for patents. Our book, "Patent-Sense," gives those facts; free. Write Lacey & Lacey, 738 F St., Washington, D. C. Established 1869.

"PATENT PARTICULARS" AND ADVICE ON trade-marks, free. Write. Sterling Buck, W-629F, Washington, D. C.

DOGS—PET STOCK

THE WORLD'S LARGEST DOG KENNELS—Offer for sale Oorang Airedale watch dogs, automobile dogs, children's companions, farm dogs, stock drivers, hunters and retrievers. Also Big Game Hounds, Coonhounds, Foxhounds, Rabbit Hounds and thoroughbred hound and Airedale puppies. Satisfaction and safe delivery guaranteed to any point in the United States. Large illustrated descriptive catalog mailed free. Oorang Kennels, Box 133, La Rue, Ohio.

HUNDRED HUNTING HOUNDS CHEAP. TRIAL C. O. D. Beckennels, Herrick, Ill.

NURSERY

ALFRED BLACKBERRIES ARE THE LARGEST grown. Berries, 1½ inches long, 3 inches around, coreless and sweet. Catalog FREE with actual photographs of this wonderful berry. Also 10 varieties of strawberries including Champion everbearing. South Michigan Nursery, New Buffalo, Mich., R. 1.

FRUIT TREES, GREATLY REDUCED PRICES, direct to planters in small or large lots by express, freight or parcel post. Free 68-page catalog. Peaches, apples, plums, pears, cherries, grapes, nuts, berries, pecans, vines. Ornamental trees, vines and shrubs. Tennessee Nursery Co., Box 101, Cleveland, Tenn.

DITHMARSCHER EARLY WHITE CABBAGE, large round kind, the earliest it is possible to obtain. Free samples sent on request. Representative wanted for sale of the seeds. H. Diener Sohn, Schulp bei Wisselbaren (Holstein), Germany.

AGENTS WANTED

$300.00 A MONTH TO DISTRIBUTE EVERYday household necessity in rural and small town districts. No money needed. Million dollar firm behind it. Write for particulars and state territory desired. A. A. Johnson, 611 W. Lake, Chicago.

AGENTS—SODEREZE: WE ARE PAYING $2 AN hour taking orders for this newest invention; send for free outfit and samples. American Products Co., 1908 American Bldg., Cincinnati, O.

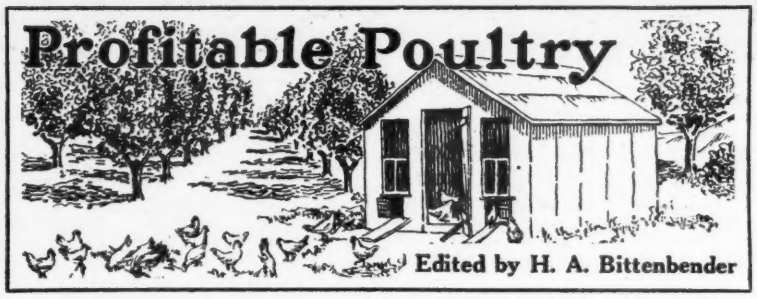
WE PAY $50 A WEEK AND EXPENSES AND give a Ford Auto to men to introduce poultry and stock compounds. Imperial Co., D-20, Parsons, Kan.

MISCELLANEOUS

FREE BOOK — ELIJAH COMING BEFORE Christ. Megiddo Association, Rochester, N. Y.

POSTAL CARD WILL BRING CIRCULARS OF the Twin Coal Co. Gas Burner. Write C. H. Poe Burner Company, Kenton, Ohio.

(Continued on opposite page)



Some Suggestions Concerning Common Chicken Troubles

THERE are a number of serious poultry diseases which may give trouble during the winter months. Some of the more important of these are as follows:

Chicken Pox

Chicken pox is a common poultry disease among birds six to eight months of age. It is apparently closely related to roup, but the cause and relationship of these diseases are not known. The disease passes so quickly through a flock that it may be an exceedingly disastrous trouble.

Symptoms: Chicken pox makes its appearance as small, greasy, scab-like growths, irregular in shape. They vary from a pinhead to a pea in size and are yellowish to a reddish-gray in color at first and later take on a dirty gray or brownish crust. These wart-like nodules lie on any of the non-feathered portions of the head of the bird, such as the comb, wattles, face and eyelids. In later stages of the disease, false or diphtheritic membranes may form in the mouth, nose passages and wind pipe, causing death by strangulation. The disease may extend to the intestines, causing diarrhea, with subsequent watery, bad smelling droppings, which are sometimes bloody. This usually causes stupor, dullness, depression and death.

Transmission: Infected birds spread the disease rapidly, apparently by coming in contact with other birds and contamination of feed and water by crusts from the head, droppings and secretions from the mouth. Warm and damp weather favors its rapid transmission, especially in a flock with low vitality.

Treatment: The vitality of the flock must be increased by stimulating palatable feed, such as milk, mashes, green feed, green cut bone and grain. A tonic of one part epsom salts and one part dry powdered sulphur to 12 parts of dry mash has given good results. Mix to a crumbly condition with milk or water and feed every other day until the condition of the flock improves. Bad cases with false membranes in the mouth should be killed and burned. All others should be isolated, when possible. These cases should receive a head bath in a 1-1000 solution of bichloride of mercury, made by placing a 7.3 grain tablet in a pint of water. Carbolated vaseline or full strength tincture of iodine applied at two or three-day intervals will remove the scabs. For especially valuable birds, scabs should be removed with a sharp knife before applying the above treatment.

Contagious Roup

Contagious roup is a rapidly spreading disease, which is very common during the fall and early winter in some states. It causes a heavy death rate, interferes with egg production and causes loss of vitality in breeding. It is very contagious, especially in damp, cold weather, and attacks both young and old stock.

Symptoms: Contagious roup is probably easier to identify than any other poultry disease. It starts usually like a simple cold, with a thin, watery discharge from the nose and eyes. This secretion has a peculiar offensiv odor. Inflammation develops in the nasal passages, eyes and spaces just below the eyeballs. The birds then often cough and sneeze; breathing becomes noisy; and if the air passages of the nose become entirely blocked, they breathe through their mouths. The birds soon lose their appetite and become depressed, their wings drooping and their feathers becoming ruffled. The secretions from the nose and eyes change from a fluid to a yellowish, cheese-like mass. This grows rapidly above the eyelids and in the nostrils. One or both eyes become enlarged, and swelling may appear on the head.

Cause: The exact cause is not known. Whatever it is, the organism is hard to kill, because it penetrates into the tissues. If the cheese-like formations above the head are removed, the uneven bleeding surface which is left forms a new cheesy mass in 24 to 48 hours.

Transmission: Infected birds carry the disease from place to place and infect others by contact. Food and water may become contaminated by the secretions from sick birds, and healthy birds become infected in this way.

Control: Roup is easily controlled by proper management and housing. Damp, unsanitary, poorly ventilated, over-crowded, drafty quarters are conducive to its spread. The first treatment is to remove the cause at once. Only valuable birds should have individual treatment. A simple cure for the sick bird is as follows: Place it in a dry, well ventilated place away from the other birds and give it plenty of fresh water and feed. Every morning and evening remove all the cheesy matter from the eyes and nostrils of the bird and dip its head in a solution of bichloride of mercury (1-1000). This is made by placing one 7.3 mercury bichloride tablet in a pint of water. Hold the bird firmly and immerse the head until the eyes are covered, keeping it there a few seconds, or until it struggles. A mixture made up as follows should be applied: One pound petroleum jelly, one ounce iodoform and one and one-half drams of menthol crystals. In most cases, the following procedure is advisable:

(1) Dispose of bad cases by killing and burning them; (2) isolate birds having colds; (3) be sure quarters are dry and tight on all sides, with adequate opening in the front for ventilation and light to reach every part of the house; (4) allow at least three square feet of floor space per bird; (5) place a little kerosene on the top of the drinking water, or one 7.3 grain mercury bichloride tablet in a gallon of water in a non-metal container. These should never be used for more than 10 days in succession; (6) place one pound epsom salts per 100 birds in the drinking water or a wet mash.

THE CANADIAN Department of Health has found that the ruling with reference to sulphur content of dried apricots, peaches, pears and apples is impractical, the sulphur content allowed being entirely too low. Under a revised ruling, the department will allow a content of 2500 milligrams of sulphurous acid per kilogram, or five parts in 2000, or one-fourth of one per cent.

The department announces that all dried fruit shipments into Canada will be detained until the government has had time to analyze the products for sulphur content.

What Is The Howell-Barkley Bill?

IT IS a bill that concerns every person in the United States. It was written by the leaders of the railway labor unions and introduced in Congress at its last session. Its purpose is to increase the power of the railway labor leaders over the railroads. **Its effect would be to make it much more difficult, if not impossible, to further reduce railway operating expenses and rates.**

The Howell-Barkley bill will soon be brought up for consideration in Congress again. Farmers are much interested in railway service and rates and should, in their own interest, urge senators and congressmen to vote against it.

Railway Wages and Rates

The total wages paid by the railways in 1916, before any freight rates were advanced, were $1,468,576,394. The total wages paid in 1923 were $3.043,-161,163, **an increase of $1,574,-584,769.** This increase in wages is the principal reason why present rates are necessary. Wages are 60 per cent of all railway operating expenses.

It ought to be possible to advance or reduce railway wages by **peaceable means** when business conditions justify advances or reductions.

Disputes between railways and their employees which cannot be settled by direct negotiations must now be submitted to the Railroad Labor Board. This is an impartial body composed of three representatives of the employees, three representatives of the railways, and three representatives of the public appointed by the President of the United States. The public holds the balance of power.

A Bill That Would Promote Railway Strikes

The Howell-Barkley bill would abolish the Railroad Labor Board. It would create four "National Boards of Adjustment." Only the railways and the "standard national railway labor unions" would be represented by them. **The public would not be represented.** Almost one-half of railway employees do not belong to the national labor unions. They would not be represented on these boards unless they joined the national unions. One reason why the labor leaders want the Howell-Barkley bill is that they hope it will cause all employees to join the national unions and thereby **force the closed shop on the railways.**

The Howell-Barkley bill would also create "a Federal Board of Mediation and Conciliation. **This would not, however, be an arbitration board.** All it could do in a dispute over wages would be to try to get the employees and the railways to agree or to arbitrate. At present if there is a dispute which may interrupt transportation the employees and the railways must arbitrate it before the Railroad Labor Board. **If the Howell-Barkley bill should be passed either the railways or the employees could refuse to arbitrate.**

The time may come when conditions will justify reductions of railway wages. **The labor leaders for many years have followed the policy of always refusing to agree to any reduction of wages or to voluntarily arbitrate any reduction of wages.** There is no reason to believe their policy will be different in future. **This means that if the Howell-Barkley bill were passed no reduction of wages ever could be made without a strike.**

Why the Howell-Barkley Bill Should Be Defeated

First, because it would impose unnecessary expense upon the government which the taxpayers would have to pay. Second, because it would deprive almost one-half of all railway employees of a voice in the settlement of disputes with the railways or force them to join the national labor unions. Third, because it would deprive the American public, which pays all passenger and freight rates, of any voice in the settlement of disputes about railway wages. Fourth, because it would greatly increase the difficulty of reducing railway operating expenses and rates. Fifth, because it would greatly increase the danger of railway strikes.

Congressman Tincher of Kansas, representative of a farmer constituency, denounced the Howell-Barkley bill in a speech at the last session of Congress as "a Resumption of Railway Strikes Bill."

Any senator or congressman who votes for this bill will vote against the best interest of farmers and all others who pay railway rates.

This is one of a series of advertisements published to give the farmer authentic information about railroad matters. Any questions that you would like to ask will be cheerfully answered. Address:

WESTERN RAILWAYS' COMMITTEE ON PUBLIC RELATIONS
650 Transportation Building, Chicago, Illinois

S. M. FELTON, President, Chicago Great Western Railroad,
L. W. BALDWIN, President, Missouri Pacific Railroad,
RALPH BUDD, President, Great Northern Railway,
H. E. BYRAM, President, Chicago, Milwaukee & St. Paul Ry.,
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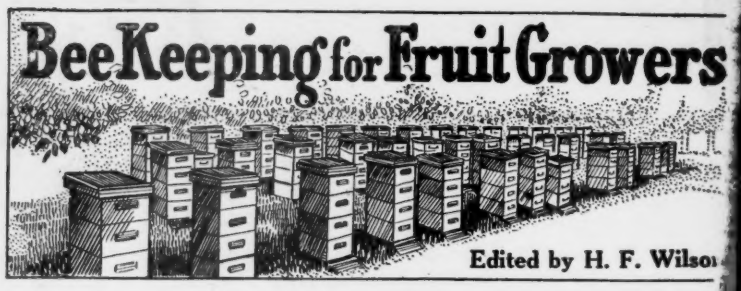

Edited by H. F. Wilson

Marketing of This Season's Hone

THE SEASON of 1924 was, in the opinion of the writer, one of the most important in American beekeeping history. Not that it was any different from many other seasons from the standpoint of crop production, but it was different from the standpoint of crop valuation. Beekeeping is an important industry in America and is becoming more important each year as better marketing conditions are developed. There is no justifiable reason for any individual or group of individuals giving their time to the production of a crop which does not pay fair wages and give a fair return on the investment for equipment and machinery. Just how much your time should be worth is a question which the individual must decide for himself, but, from appearances, it seems that the farmers are probably more underpaid than any other class of workmen. This may be due to lack of marketing facilities, or it may be due to lack of business methods in marketing their crop.

How Did You Dispose of Your Crop This Season?

The honey crop was short throughout the entire United States this year, and at the present time there is very little honey in the hands of the beekeepers. Before May 1, 1925, there will be practically no honey available for general market distribution. This year every producer of honey in the United States should have received a better-than-average price for his crop. However, we know that thousands of beekeepers literally gave away their honey for whatever price they were offered, without in any way attempting to determine the amount available and the business demand. Some beekeepers have even retailed honey at 12 and 13 cents a pound when their neighbors were disposing of 5000 and 10,000 pound lots at 12½ cents wholesale, f. o. b. their shipping point.

What is a Fair Price for Honey?

What is a fair price for honey? This is a question which has been discussed a great many times at beekeepers' meetings. As a matter of fact, what is a fair price for any agricultural product? It should be a price which will permit a fair average return both for wages and investment of live-stock, tools, machinery and buildings. Before the beekeeper should permit a price to be established, he should figure these items very carefully. There are plenty of statistics on record to show that the beekeeper with a large number of colonies can hardly afford to produce honey and sell it for less than 10 or 11 cents per pound in thousand pound lots, and that the beekeeper who only has a few colonies of bees must receive a little better price in order to break even. It is an established fact that it requires about a 100 per cent increase in price from the producer to the consumer to market honey. This being the case, no beekeeper can afford to retail honey for 12 or 15 cents per pound, as is too commonly done. On this basis, 20 cents per pound would be a very fair and reasonable price to the individual beekeeper who produces and markets honey locally.

Factors in Judging Value

A colony of bees, including the proper number of supers and equipment for taking off the honey, may safely be valued at $20 per colony. The average production per colony will probably run somewhere betwee 50 and 100 pounds per colony. Whol saling this at 10 cents a pound woul mean something over $5, out of whic must be taken the labor of the indivi ual, which is estimated at $3, and th cost of the containers, with labels $1.50, which would leave an inade quate sum for the interest on the i vestment where the average produ tion is 50 pounds per colony, with possible maximum return for the i vestment where the 100-pound avera is secured. However, since the or nary colony production for the Unit States is considerably less than pounds per colony, we can expect o a very few well-experienced beeke ers to secure anything like the s gested maximum average. Add this the expense of fuel, light, wat labor, containers, labels for bottli and the cost of selling operations, a the individual who markets his ho for 20 cents per pound retail never hope to secure more than a age returns.

Many Growers Sold Too Cheaply T Year

In a season like 1924, when supply is short and the demand is sistently good, the price naturally vances several cents per pound, those beekeepers who applied ness methods to their marketing cured the better return. On the o hand, hundreds of beekeepers, v have been for many years selling th honey locally at prices below the m ket price, not only failed to take a vantage of the increased valuati but accepted preventable losses fo which there was no excuse. No doub many of these same people who hav time to look around after their pro uct is sold will find the storekeep selling honey at more than double t price they received, and will accu the merchants of profiteering. If t demand for any product is such th a merchant can dispose of that pro uct at the price he asks, is it reason able to accuse him of unfair method when the individual beekeeper him self sold his honey for a price belo what he could have received had h requested it?

Honey Can Be Made to Return Fa Profits

Honey is really a very easy produc to sell at a price which will give fair return to the beekeeper, the job ber, the wholesaler and the consume As a matter of fact, in the store honey normally sells anywhere fro 25 to 40 cents a pound for both ex tracted and comb honey. Why, then, should any beekeeper retail honey at 10, 12, or 15 cents a pound? **How did you dispose of your crop this year?** Did you wholesale it, and if so, did you get a fair average price? If you retailed it, did you figure in costs of production and wages for selling?

Perhaps you are keeping bees as a hobby and really do not care for the amount of money which you may secure from your bees. If this is true, then for Goodness' Sake, do not break down the markets for real beekeepers by disposing of your honey at whatever price you may get. Be a full-fledged philanthropist and give your honey away to your friends!

For those who have not received a fair, marketable price for honey, we would suggest that you begin now to make a study of marketing conditions so that in the future you may find beekeeping a profitable business.

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